

Application For Certificate of Public Convenience and Necessity

And

Utility Permit Application, Part 2

**Paddock-Rockdale
345 kV Access Project**

**PSCW Docket No.
137-CE-149**

May 2007



**Paddock-Rockdale 345 kV Access Project
Table of Contents**

Application For Certificate Of Public Convenience And Necessity
WDNR Utility Permit Application Part 2

INTRODUCTION AND OVERVIEW

<u>SECTION</u>	<u>PAGE</u>
A. INTRODUCTION.....	1
B. PROJECT DESCRIPTION.....	2
C. PURPOSE AND NECESSITY.....	7
D. PROJECT COST.....	12
E. CONSTRUCTION SCHEDULE	12
F. ENVIRONMENTAL IMPACTS	12
G. ENTITIES AFFECTED	13
H. CONCLUSION.....	13

TECHNICAL SUPPORT DOCUMENT

<u>SECTION</u>	<u>PAGE</u>
2.1 ENGINEERING INFORMATION	1
2.1.1 Type and Location of Line Construction	1
2.1.2 General Description of Proposed Line	6
2.1.3 Studies of the Problem and Possible Solutions	15
2.1.4 Substation Facilities.....	18
2.1.5 Contractual Agreements.....	19
2.1.6 Transmission Service Agreements	19
2.1.7 Transmission Costs.....	20
2.1.8 Construction Schedule and Seasonal Construction Constraints	27
2.1.9 Transmission Tariffs	27
2.2 PROJECT DEVELOPMENT AND ALTERNATIVES CONSIDERED.....	28
2.2.1 System and Local Transmission-Level Alternatives (& reasons rejected)	28
2.2.2 Route Evaluation Factors.....	28
2.2.3 Route Corridor Alternatives.....	29
2.2.4 Public Outreach.....	30
2.3 GENERAL TRANSMISSION LINE SITING INFORMATION.....	31

Paddock-Rockdale 345 kV Access Project
Table of Contents

Application For Certificate Of Public Convenience And Necessity
WDNR Utility Permit Application Part 2

<u>SECTION</u>	<u>PAGE</u>
2.4 DETAILED ROUTE INFORMATION.....	37
2.4.1 General Route Impacts	37
2.4.2 Detailed Route Impacts by Existing Land Cover	46
2.4.3 Impacts by Land Ownership – Public and Tribal lands	50
2.4.4 TABLE 4 – Summary Table	52
2.4.5 Agricultural Land.....	52
2.4.6 Forest Land	55
2.4.7 Conservation Easements	56
2.4.8 Endangered, Threatened, or Special Concern Species, and Natural Communities	57
2.4.9 Archaeological and Historic Resources	58
2.4.10 Nearby Airports.....	59
2.4.11 Access Issues	60
2.4.13 Wetlands and Wetland Crossings	63
2.4.14 Mapping Wetland and Waterway Crossings.....	67
2.5 CONSTRUCTION METHODS	68
2.5.1 General Construction Information.....	68
2.5.2 Underground Construction.....	78
2.5.3 Waterway Crossings	78
2.5.4 Wetland Crossings.....	79
2.5.5 Re-vegetation.....	81
2.5.6 Erosion Control Plan (sites greater than 1 acre)	82
2.5.7 Materials Management Plan	88
2.5.8 Dewatering Plan.....	91
2.6 SUBSTATION INFORMATION	92
2.6.1 Substation Location, Dimensions & Layout	92
2.6.2 Size (acres) and Orientation	92
2.6.3 Grading and Landscaping	92
2.6.4 Ownership Plat and Topography Maps	92
2.6.5 Transmission Lines and Structures.....	92

Paddock-Rockdale 345 kV Access Project
Table of Contents

Application For Certificate Of Public Convenience And Necessity
WDNR Utility Permit Application Part 2

<u>SECTION</u>	<u>PAGE</u>
2.6.6 Access Roads.....	93
2.6.7 Construction Procedures.....	93
2.6.8 Environmental Information	94
2.7 EMF INFORMATION.....	96
2.7.1 Transmission Line EMF	96
2.7.2 Existing Substations	96
2.7.3 New Power Plants (requiring no line additions)	96
2.8 DNR PERMITS AND APPROVALS.....	97
2.8.1 Waterways and Wetlands	97
2.8.2 Wetlands Alternatives Analysis	97
2.8.3 Storm Water Management	99
2.8.4 Endangered/Threatened Species Incidental Take	99
2.9 OTHER AGENCY CORRESPONDENCE	100
2.9.1 ATC Correspondence	100
2.9.2 Agency Responses.....	100
2.9.3 Agency Permits	100
2.10 PROPERTY OWNER INFORMATION	102
2.10.1 Alphabetized Lists in UNF Format	102

Paddock-Rockdale 345 kV Access Project
Table of Contents

Application For Certificate Of Public Convenience And Necessity
WDNR Utility Permit Application Part 2

<u>APPENDIX A</u>	<u>PROJECT MAPS & ENVIRONMENTAL TABLES</u>	<u>PAGES</u>
Figure 1	Proposed Project (showing Proposed & Alternate Routes)	1
Figure 2	Project Area	1
Figure 3A & 3B	Page Index – 1" = 400' Scale Maps	2
Figure 4A & 4B	Page Index – 1" = 2000' Scale Maps	2
Figure 5A	Existing Land Use – Proposed Route	7
Figure 5B	Existing Land Use – Alternate Route	7
Figure 6A	Orthophotography - Proposed Route	34
Figure 6B	Orthophotography –Alternate Route	36
Figure 7A	Topography – Proposed Route	7
Figure 7B	Topography – Alternate Route	7
Figure 8	Zoning	9
Figure 9A	Tax Parcels – Proposed Route	34
Figure 9B	Tax Parcels – Alternate Route	36
Figure 10A	Floodplain – Proposed Route	7
Figure 10B	Floodplain – Alternate Route	7
Figure 11A	Rock County Adopted Land Use Plans	18
Figure 11B	Dane County Adopted Land Use Plans	12
Figure 12	Plat Book Maps	6
Figure 13	Airport Height Limitation Zoning	1
Figure 14	Shared Corridor Maps (incl. Map Index) Identified in Route Impact Tables 1A-4	8
Figure 15A	Environmental Features & Access Plan - Proposed Route	34
Figure 15B	Environmental Features & Access Plan - Alternate Route	36
Figure 16	Laydown Area Maps	8
Figure 17	Rock County Airport Height Limitation Zoning Map	1

Paddock-Rockdale 345 kV Access Project
Table of Contents

Application For Certificate Of Public Convenience And Necessity
WDNR Utility Permit Application Part 2

<u>APPENDIX A</u> <u>(continued)</u>	<u>PROJECT MAPS & ENVIRONMENTAL</u> <u>TABLES</u>	<u>PAGES</u>
Table 1A	Proposed & Alternate Routes General Route Impacts	2
Table 1B	Proposed & Alternate Routes Building Distance from ROW Centerline	2
Table 2	Detailed Route Impacts by Existing Land Cover (by Segment) for Proposed & Alternate Routes	2
Table 3	Impacts by Land Ownership – Public & Tribal Lands for Proposed & Alternate Routes	2
Table 4	Summary Table of Proposed & Alternate Route Impacts	1
Table 5	Airports Within 5-mile Radius of Proposed or Alternate Route	1
<u>APPENDIX B</u>	<u>TRANSMISSION & SUBSTATION</u> <u>FACILITIES</u>	<u>PAGES</u>
Figure 1	Christiana Substation One-Line Diagram	1
Figure 2	Christiana Substation Equipment Layout	1
Figure 3	Paddock Substation One-Line Diagram	1
Figure 4	Paddock Substation Plan View	1
Figure 5	Rockdale Substation One-Line Diagram	1
Figure 6	Rockdale Substation Breaker & One-half Scheme	2
Figure 7	Rockdale Substation Grading Plan	1
Figure 8	Rockdale Substation Zoning Map	1
Figures 9-19	Structure Drawings	11

Paddock-Rockdale 345 kV Access Project
Table of Contents

Application For Certificate Of Public Convenience And Necessity
WDNR Utility Permit Application Part 2

<u>APPENDIX C</u>	<u>TRANSMISSION STUDIES</u>	<u>PAGES</u>
Exhibit 1	Planning Analysis Document	133
Exhibit 2	Planning Analysis Cover Letter to MISO	2
Table 1	PROMOD Input/Output File 2011 Reference Cases	1

<u>APPENDIX D</u>	<u>EMF STUDIES</u>	<u>PAGES</u>
Exhibit 1	EMF Report	45
Figures 1-35	EMF Report Figures	35
Figures 36-37	EMF Report Figures	2

<u>APPENDIX E</u>	<u>WDNR UTILITY PERMIT APPLICATION</u>	<u>PAGES</u>
Exhibit 1	Archeological Report (text & tables) & Cover Letter	58
Exhibit 2	Archeological Report for Rockdale Substation	2
Exhibit 3A	CH 30 Photo Log – Proposed Route	6
Exhibit 3B	CH 30 Photo Log – Alternate Route	7
Exhibit 4	WDNR Utility Permit Application Part 1 and Cover Letter	11
Exhibit 5	Archeological Report for Laydown Areas	2
Figure 1A	CH 30 Notification Maps – Proposed Route	34
Figure 1B	CH 30 Notification Maps – Alternate Route	36
Figure 2A	TSCB Cross-Sections – Proposed Route	10
Figure 2B	TSCB Cross-Sections – Alternate Route	7
Table 1	Farm Buildings	1
Table 2A	Environmental Inventory Table - Proposed Route	1
Table 2B	Environmental Inventory Table - Alternate Route	1
Table 3A	Forestry Lands by Segment Table – Proposed Route	1

Paddock-Rockdale 345 kV Access Project
Table of Contents

Application For Certificate Of Public Convenience And Necessity
WDNR Utility Permit Application Part 2

<u>APPENDIX E</u>	<u>WDNR UTILITY PERMIT APPLICATION</u>	<u>PAGES</u>
<u>(continued)</u>		
Table 3B	Forestry Lands by Segment Table – Alternate Route	1
Table 4A	Chapter 30 Supplemental Table – Proposed Route	1
Table 4B	Chapter 30 Supplemental Table – Alternate Route	1
List 1	Dane County CH 30 Adjacent Riparian Landowners	1
List 2	Dane County CH 30 Riparian Landowners	1
List 3	Rock County CH 30 Adjacent Riparian Landowners	1
List 4	Rock County CH 30 Riparian Landowners	1

<u>APPENDIX F</u>	<u>PUBLIC OUTREACH</u>	<u>PAGES</u>
Exhibit 1	July 2006 Environmental Survey Work Announcement Letter to Public Officials	1
Exhibit 2	July 2006 Environmental Survey Work Announcement Letter to Landowners	1
Exhibit 3	Fact Sheet	1
Exhibit 4	Open House Invitation Letter	1
Exhibit 5	Open House Thank You Letters	5
Exhibit 6	Comment Sheets	14

Paddock-Rockdale 345 kV Access Project
Table of Contents

Application For Certificate Of Public Convenience And Necessity
WDNR Utility Permit Application Part 2

<u>APPENDIX G</u>	<u>AGENCY CORRESPONDENCE</u>	<u>PAGES</u>
Exhibit 1	DATCP Letter of October 3, 2006	8
Exhibit 2	Project Plan & Cover Letter Feb. 14, 2007	8
Exhibit 3	WSHS Letter re: Archaeological & Historical Resources (April 16, 2007)	1
Exhibit 4	TES Submittal Cover Letter to WDNR	1
Exhibit 5	TES Report (redacted version)	52
Exhibit 5A	TES Report Redacted Maps (Fig. 1-4)	89
Exhibit 6	WDNR Response to Project Plan	1
Exhibit 7	Local, State, Federal & Other Agencies with Interest in Lands along Proposed & Alternate Routes	40
Exhibit 8	ACOE Letter	1
Exhibit 9	WDNR Permit Application Part 1	51
Exhibit 10	ATC/PSCW Meeting Minutes	9
List 1	Mailing List for Exhibit 7	1
<u>APPENDIX H</u>	<u>MAILING LISTS</u>	<u>PAGES</u>
List 1	Potentially Affected Landowners	7
List 2	Public Property Landowners	1
List 3	Municipal Clerks & Regional Planning Commission	1
List 4	State & Federal Agencies and Local Media	3
List 5	Public Libraries	1
<u>APPENDIX I</u>	<u>CONSTRUCTION PRACTICES</u>	<u>PAGES</u>
Exhibit 1	Energized Construction Segments 9 & 14	6
<u>APPENDIX J</u>	<u>ENVIRONMENTAL IMPACT FEES</u>	<u>PAGES</u>
Table 1-2	Env. Impact Fees by Unit of Government	2

Paddock-Rockdale 345 kV Access Project
List of Acronyms and Abbreviations

Application For Certificate Of Public Convenience And Necessity
WDNR Utility Permit Application Part 2

ATC	American Transmission Company
ASNRI	Area of Special Natural Resource Interest
BMPs	Best Management Practices
CMP	Construction Management Plan
CPCN	Certificate of Public Convenience and Necessity
CTH	County Trunk Highway
DATCP	Department of Agriculture, Trade and Consumer Protection
EHS	extra-high strength
EMF	electromagnetic field
FAA	Federal Aviation Administration
FERC	Federal Energy Regulatory Commission
ft	Feet
GIS	Geographic Information System
GPS	Global Positioning System
GRP	Grassland Reserve Program
HLZO	Height Limitation Zoning
kcmil	kilo circular mils
KDL	Kentucky Data Link, Inc.
kV	kilovolt
LMP	locational marginal price
MISO	Midwest Independent System Operator, Inc. (Midwest ISO)
NAIP	National Agriculture Imagery Program
NESC	National Electric Safety Code
NRC	Natural Resource Consulting, Inc.
NRCS	Natural Resources Conservation Service
OPGW	optical ground wire
PSCW	Public Service Commission of Wisconsin (Commission)
ROW	right-of-way
STH	State Trunk Highway
TCSB	temporary clear-span bridge

Paddock-Rockdale 345 kV Access Project
List of Acronyms and Abbreviations

Application For Certificate Of Public Convenience And Necessity
WDNR Utility Permit Application Part 2

TES	Threatened and Endangered Species
TSD	Technical Support Document
USACE	United States Army Corps of Engineers
USH	United States Highway
USGS	United States Geological Survey
WDNR	Wisconsin Department of Natural Resources (Department)
WNHI	Wisconsin Natural Heritage Inventory
WSHS	Wisconsin Historical Society
WisDOT	Wisconsin Department of Transportation
WRP	Wetland Reserve Program
WWI	Wisconsin Wetland Inventory

Paddock-Rockdale 345 kV Access Project

Introduction And Overview

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

A. INTRODUCTION

American Transmission Company LLC and ATC Management Inc., its corporate manager, known collectively as American Transmission Company (ATC), own and operate transmission facilities and transact business as a transmission company and public utility. ATC's sole purpose is to plan, construct, operate, maintain and expand the transmission facilities that it owns in order to provide for an adequate and reliable transmission system that meet the needs of all transmission users in the area it serves and that supports effective competition in energy markets without favoring any market participant.

Application for Certificate of Public Convenience and Necessity: In order to meet this obligation, pursuant to the requirements of *Wis. Stat.* §§ 196.49 and 196.491 and *Wis. Admin. Code* chs. PSC 4, 111 and 112, ATC hereby applies to the Public Service Commission of Wisconsin (PSCW or Commission) for a Certificate of Public Convenience and Necessity (CPCN) together with any other authorization necessary, to construct 34.7 to 36.1 miles (depending on the route ordered) of new 345 kV transmission line, double-circuit configuration with the existing 345 kV transmission line generally referred to by ATC as W-4¹, and related facilities for a project generally known as the Paddock-Rockdale 345 kV Access Project (Paddock-Rockdale project Project), as set forth in further detail below.

Utility Permit Application (Part 2): Through this Application, pursuant to *Wis. Stat.* ch. 283 and §§ 30.025(1s), 30.19, 30.123 and 281.36, and *Wis. Admin. Code* chs. NR 103, 216, 299, and 320, ATC hereby applies to the Wisconsin Department of Natural Resources (WDNR or Department) for the permits and authorizations necessary to construct the proposed facilities.

This Joint Application for a CPCN and WDNR Utility Permit has been prepared in accordance with the PSCW and WDNR *Information Requirements for Applications to Construct Electric Transmission Line and Substations* (Part 2.00), version 17A, and in accordance with the Commission Staff Final Report on Transmission Access dated March 23, 2006 in PSCW Docket No. 137-EI-100.

¹ ATC uses an alpha-numeric system to refer to its transmission facilities. Unless otherwise indicated, references in this Application to transmission lines in an alpha-numeric format refer to existing transmission lines.

Paddock-Rockdale 345 kV Access Project Introduction And Overview

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

B. PROJECT DESCRIPTION

ATC proposes to build 34.7 to 36.1 miles (depending on the route ordered) of new 345 kV transmission line (designated W-10) from the existing Paddock Substation to the existing Rockdale Substation, on a combination of double- and triple-circuit new steel monopole and existing lattice tower structures in the cities of Janesville and Edgerton (Alternate Route only), towns of Fulton, Janesville, Beloit and Rock in Rock County (both routes), and the towns of Christiana and Albion in Dane County Wisconsin (both routes).

The Proposed Route is ATC's *preferred* route for several reasons. First, the cost of the Proposed Route is approximately \$78 million less than the Alternate Route, in part because ATC will be able to reuse forty (40) existing lattice and three (3) H-frame structures. Secondly, the Proposed Route can be constructed within an existing 150-foot-wide utility ROW, on the same structures as an existing 345 kV transmission line. Third, the net impact to the land and landowners is lower because of fewer total structures and a smaller footprint area for the large majority of replacement structures. In addition, the Proposed Route can be constructed in a shorter timeframe than the Alternate Route and be placed in service by June 2010, allowing for the maximum opportunity for savings as outlined in ATC's *Planning Analysis* document which is included in the Technical Support Document as part of this Joint Application (TSD).

The alternate route also has the advantage of being primarily co-located with existing transmission corridors and providing some geographic diversity between 345 kV lines. Most new structures would have smaller footprints than existing structures.

Proposed Route

American Transmission Company's 34.7-mile Proposed Route (Segments 16, 14, 9, 8, 2 and 1 – See TSD, Appendix A, Figure 1) utilizes an existing 345 kV transmission line W-4 (also referred to as "Wempletown-Rockdale") 150-foot-wide right-of-way (ROW). The existing single-circuit steel lattice and H-frame structures (Segments 2, 9 and 14, respectively – See TSD, Appendix A, Figure 1) will be replaced with new double-circuit steel monopole structures, with the exception of the area near the Jana Airport (Segment 2) where the double-circuit line will transition from a vertical to a horizontal configuration comprised of two adjacent single-circuit lines to maintain existing glide path clearances. The existing single-circuit steel H-frame structures (Segment 16) will remain intact. The existing double-circuit 345/69 kV steel lattice structures (Segment 8) will be reused for the new W-4/W-10 double-circuit 345 kV transmission line.

Paddock-Rockdale 345 kV Access Project

Introduction And Overview

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

A portion of the existing 69 kV transmission line, Y-12 (1.5-mile section of line immediately north of Sheepskin Substation in Segment 8), will be relocated adjacent to the 345 kV double-circuit transmission line on expanded ROW (180 feet total width) single-circuit wood pole structures.

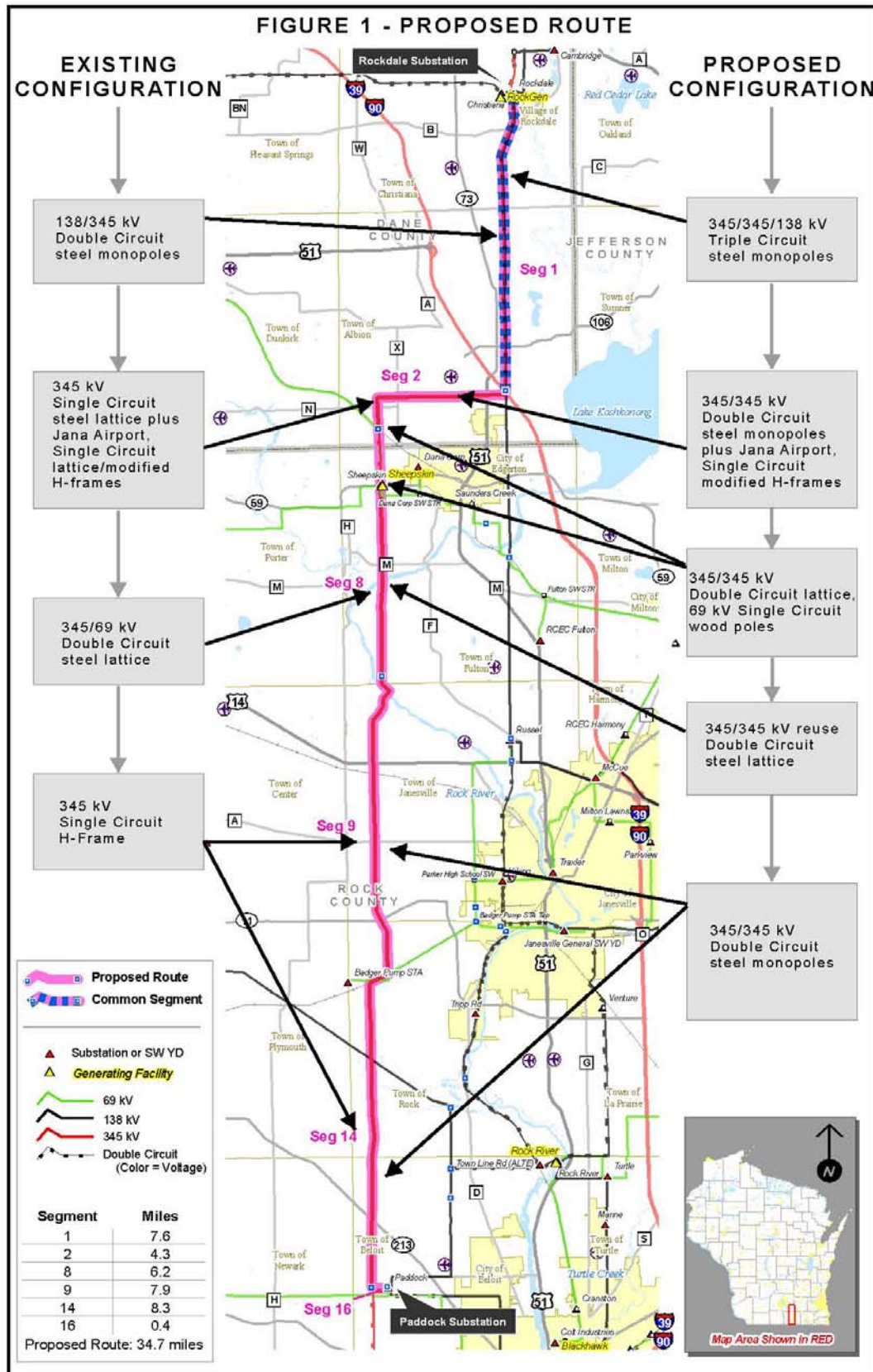
The existing W-4/X-31 (Segment 1) double-circuit (345/138 kV) transmission line steel monopole structures will be replaced with triple-circuit (345/345/138) steel monopole structures. The existing 138 kV transmission circuit (X-31) will be relocated as underbuild on these structures.

A map depicting the existing and proposed configuration by segment is shown below in Figure 1. A table listing the type and numbers of structures by segment is located in Section 2.5.1.1 of the TSD.

Paddock-Rockdale 345 kV Access Project

Introduction And Overview

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2



Paddock-Rockdale 345 kV Access Project Introduction And Overview

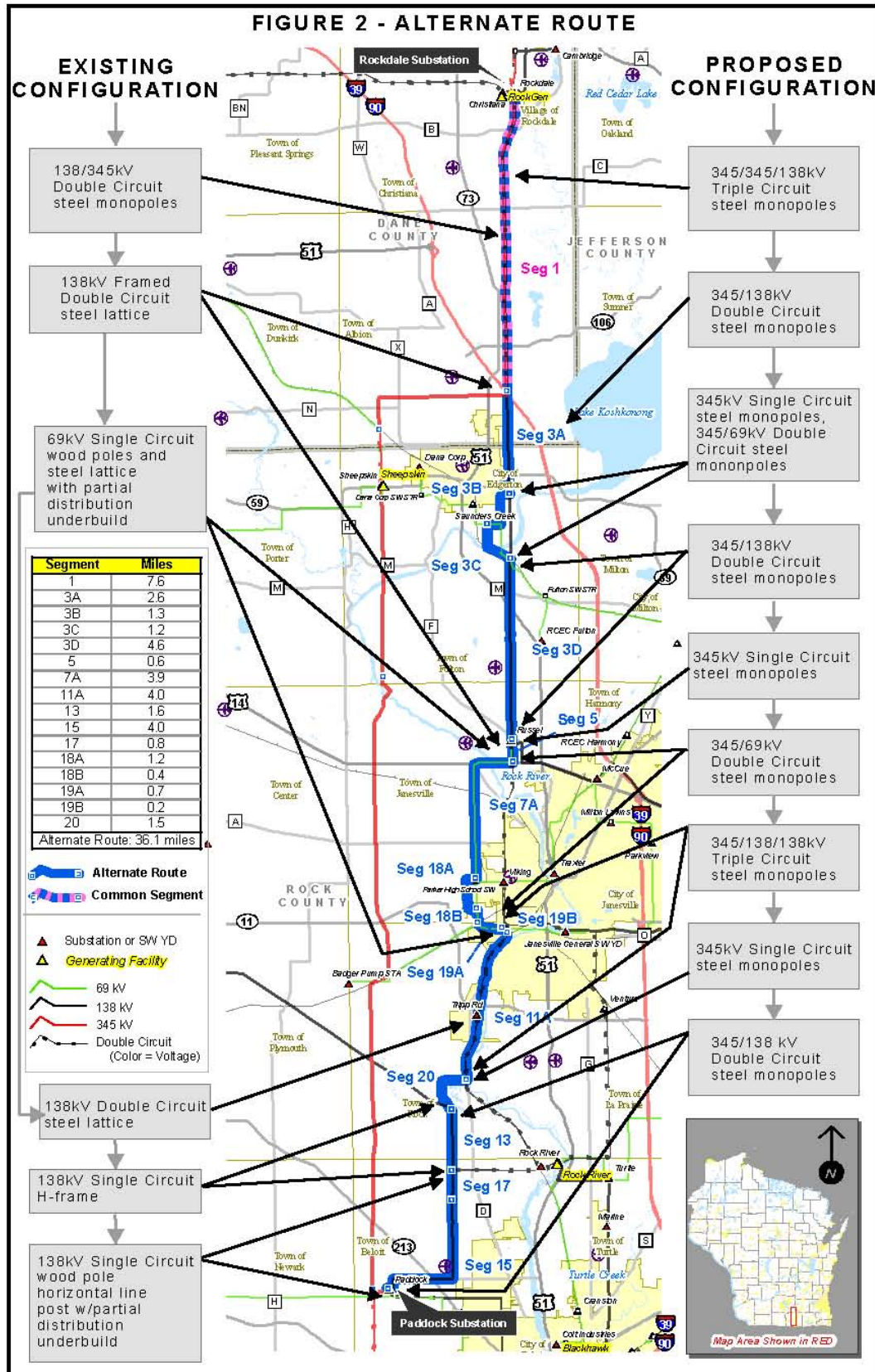
Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

Alternate Route

American Transmission Company's 36.1-mile Alternate Route (Segments 15, 17, 13, 20, 11A, 19B, 19A, 18B, 18A, 7A, 5, 3D, 3C, 3B, 3A and 1 - See TSD, Appendix A, Figure 1) utilizes a combination of existing 345 kV transmission ROW (Segment 1), existing 138 kV transmission line ROW of varying widths (Segments 15, 17, 13, 11A, 5, 3D, and 3A) and existing 69 kV 80-foot-wide ROW (Segments 19A, 18B and 7A), as well as approximately 5.3 miles of new ROW (Segments 20, 19B, 18A, 3C, 3B). The existing double-circuit 138 kV lattice towers (supporting transmission lines X-7 and X-32) will be replaced with triple-circuit steel monopole structures. The existing single-circuit 138 kV (supporting transmission lines X-39, X-31, and X-12) structures will be replaced with double-circuit steel monopole structures. The existing single-circuit 69 kV wood, steel and lattice structures will be replaced with steel double-circuit monopole structures. The existing W-4/X-31 (Segment 1) double-circuit transmission line steel monopole structures will be replaced with triple-circuit steel monopole structures. The existing 138 kV transmission line (X-31) will be relocated as underbuild. A map depicting the existing and proposed configuration by segment is shown below in Figure 2. A table listing the type and numbers of structures by segment is located in Section 2.5.1.1 of the TSD.

Paddock-Rockdale 345 kV Access Project Introduction And Overview

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2



Paddock-Rockdale 345 kV Access Project Introduction And Overview

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

Substation Work

The project scope includes replacement of five circuit breakers at the existing Christiana Substation and three 138 kV breakers at Rockdale Substation. In addition, the 345/138 kV transformer at Rockdale Substation will be replaced with a new 300/400/500 MVA autotransformer. The 345 kV bus at Rockdale Substation will be expanded to a modified breaker-and-one-half configuration to accommodate the proposed line, improve operating flexibility and providing for future 345 kV line expansions both west and east out of the substation. Protective relaying facilities will be upgraded at Paddock Substation to accommodate the new optical ground wire (OPGW). Additional detail of the OPGW is located in Section 2.1.2 of the TSD.

C. PURPOSE AND NECESSITY

For more than three years, American Transmission Company has been evaluating the economic benefits and costs of improving the access of its customers to lower-cost energy sources. Reducing congestion on its transmission system has assumed greater importance with the advent of the Open Access and Transmission Energy Markets Tariff of the Midwest Independent Transmission System Operator, Inc. (Midwest ISO or MISO) in April 2005, in which congestion cost is an important component of the energy price.

In 2004 and 2005, ATC conducted an open stakeholder process called the Access Initiative that analyzed the impacts of five access or economically based transmission projects, including the Paddock-Rockdale project proposed in this Application. In 2005 and 2006, the Public Service Commission continued this review in a policy proceeding on transmission access (PSCW Docket No. 137-EI-100). The culmination of that proceeding was a *Commission Staff Final Report on Transmission Access* issued in March 2006. This report provided ATC with guidance regarding the methods for evaluating access or economically based projects and provided guidance on the elements of a CPCN application for such a project. The report emphasized the need to study a wide variety of future scenarios and perform a detailed risk assessment.

Paddock-Rockdale 345 kV Access Project Introduction And Overview

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

Based upon the Commission Staff Report, ATC selected the proposed Paddock-Rockdale project as the most appropriate option for more detailed evaluation, while continuing to study alternative access projects. ATC adopted an analytical approach known as Strategic Flexibility that measured the impacts of the Paddock-Rockdale project using seven different plausible “futures” or sets of circumstances for the electric industry. These futures included both robust and slow economic growth, the adoption of additional environmental regulation, and fuel supply volatility. The futures were composed of ranges of values for important factors, such as load growth, generation retirements and expansions, fossil fuel costs, increased use of renewable energy, and more extensive environmental regulation.

American Transmission Company also employed a wide range of benefit measures to quantify the effects of adding the Paddock-Rockdale project to its system. ATC quantified the following economic and reliability benefits of the project:

- **energy cost savings** (reductions in the cost of delivered energy for ATC’s transmission customers - the municipal, cooperative and investor-owned utilities that use ATC’s transmission system to deliver energy to their respective retail customers; ATC used various metrics to quantify these energy-cost savings, based on the production cost of generators serving ATC load and the locational marginal price (LMP) or market price paid for energy in the wholesale market administered by the Midwest ISO));
- **increased competitiveness** (the economic savings from the increased ability of external suppliers to offer additional generation that could be transmitted by ATC for its transmission customers, and savings from mitigating market prices during tight market conditions);
- **system insurance value** (the ability of an expanded transmission system to reduce the energy costs incurred during less frequent, but more severe, generation or transmission outages); and
- **capacity savings from reduced electrical losses** (a reduced need for on-peak generating capacity due to a reduction in electrical losses).

American Transmission Company calculated monetary values for these benefits on an aggregate annual basis for two study years (2011 and 2016), and also calculated the net present value (NPV) of the Project’s net benefits over its lifetime.

Paddock-Rockdale 345 kV Access Project Introduction And Overview

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

The Paddock-Rockdale project is also expected, during the course of its useful life, to have additional positive economic and reliability impacts on ATC's transmission customers and their respective retail customers. However, ATC chose to follow a conservative approach in quantifying benefits and did not assign quantitative values to the following additional positive effects:

- **system reliability impact** (a project like the Paddock-Rockdale project built primarily for economic reasons also contributes to the reliability of the electrical system and reduces the risk of outages, especially over time);
- **long-term resource cost advantage** (a new interconnection like the proposed project increases the physical deliverability of energy from generators outside of Wisconsin that have access to lower-cost fuel (e.g. coal or Integrated Gasification Combined Cycle plants at mine-mouth coal sites) or that produce lower-cost renewable energy (e.g. power from wind farms with higher capacity factors)); and
- **reduced reserve-margin requirements** (transmission projects like the proposed Paddock-Rockdale project increase import capability and have a positive impact on the state's ability to reduce reserve-margin requirements while still meeting reliability requirements).

Based upon the results of this analysis, ATC believes that the Paddock-Rockdale project will consistently produce benefits in excess of its costs and will reduce the delivered price of energy to its transmission customers and to their respective retail customers without creating unreasonable risks. Except for the slow growth future (which is highly unlikely to persist for the entire forty-year life of the project), the NPV of the *net* benefits available as a result of constructing the Paddock-Rockdale project ranges from *\$82 million* to *\$1.8 billion* dollars, depending on the future and the metric. The *aggregate* annual benefits available for all the futures range from *\$7 million* to *\$133 million* dollars for 2011 and from *\$7 million* to *\$230 million* dollars for 2016. With these levels of benefits, the Paddock-Rockdale project will first show net savings over the annual cost of constructing the facilities in 2011, the first full year after its in-service date, in most futures and metrics. The economic benefits will exceed on a net savings basis the cumulative cost of constructing the facilities by 2013 in most futures and metrics. The complete analysis of the project is provided in ATC's *Planning Analysis of the Paddock-Rockdale Project* found in Appendix C, Exhibit 1 of the TSD.

Paddock-Rockdale 345 kV Access Project Introduction And Overview

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

As proposed, the Paddock-Rockdale project will meet all the requirements of state law regarding economic need. It will:

- satisfy the reasonable needs of the public for an adequate supply of electricity, as required by Wis. Stat. § 196.491(3)(d)2;
- be in the public interest considering other options, alternative locations and routes, individual hardships, and engineering, economic, safety, reliability, and environmental factors, as required by *Wis. Stat* § 196.491(3)(d)3;
- increase transmission import capability into Wisconsin, while using existing rights of way to the extent practicable, with routing and design that minimizes environmental impacts in a manner consistent with achieving reasonable electric rates, as required by *Wis. Stat.* §196.491(3)(d)3r;
- provide usage, service, and increased regional reliability benefits to wholesale and retail customers in this state, with benefits that are reasonable in relation to costs, as required by *Wis. Stat.* § 196.491(3)(d)3t;
- have a material positive impact in the relevant wholesale electric service market, as set forth in *Wis. Stat.* § 196.491(3)(d)7.

Consistent with *Wis. Stat.* §196.49(3), the project will also:

- improve the efficiency of ATC's transmission system;
- increase the value and quantity of transmission service in proportion to its cost; and
- provide transmission facilities consistent with probable future requirements.

As indicated above, and as more fully discussed in this Joint Application, the evidence supports and justifies the construction of the Paddock-Rockdale project, and warrants the Commission's issuance of a CPCN for this project.

The complete economic analysis and risk assessment is provided in ATC's *Planning Analysis of the Paddock-Rockdale Project* located in Appendix C, Exhibit 1 of the TSD.

A map depicting the existing ATC system in south central Wisconsin is shown below in Figure 3. The proposed Paddock-Rockdale project will add to the existing south central Wisconsin transmission facilities available to provide reliable transmission service, and greater access to the wholesale energy market.

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

Paddock-Rockdale 345 kV Access Project Introduction And Overview

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

D. PROJECT COST

The total estimated cost of the construction is either \$132,706,200 or \$210,804,100, depending on whether the Commission approves construction on of the proposed project on the Proposed Route or the Alternate Route. Estimated project costs are provided in greater detail in Section 2.1.7.1 of the attached TSD.²

E. CONSTRUCTION SCHEDULE

Based on the project's proposed schedule, the transmission line construction is scheduled to begin in fall 2008 and be complete in spring 2010.

F. ENVIRONMENTAL IMPACTS

According to *Wis. Admin. Code* ch. PSC 4, Table 1, Item bg, construction of an electric transmission line "designed for operation at a nominal voltage of 345 kV, if the line is more than 10 miles long and if any construction activity takes place outside the area of an existing electric transmission line right-of-way" is classified as a Type I action for which an Environmental Impact Statement (EIS) is normally prepared. Further, depending on the circumstances of the project, the Commission can determine that an EIS should be prepared even if the project scope is not categorized as a Type I action. With this application, ATC is providing information necessary to permit the Commission and Department to prepare an EIS. Please refer to the information provided in Sections 2.4 and 2.10 of the TSD and the associated supporting information.

In accordance with *Wis. Stat.* § 30.025(1s), as part of the Joint Application, ATC submits the detailed information in the attached TSD and Appendices to support the WDNR Utility Permit Application.

² The costs included in this Application are based upon the most currently available information relating the cost of material, labor and equipment, as well as current estimates of the costs associated with the final design, engineering and real estate acquisition. To the extent that any of those major elements change, ATC will provide updated cost information to the Commission.

Paddock-Rockdale 345 kV Access Project Introduction And Overview

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

ATC also requests that the Commission determine the amount of the Environmental Impact Fee required, and to determine the appropriate distribution of the amount of such fee to the counties, towns, and villages as required. See *Wis. Stat* § 196.491(3)(gm). ATC has determined that certain information is necessary to assist the Commission in determining the fee required. Tables showing this information are provided in Appendix J, Tables 1 and 2.

G. ENTITIES AFFECTED

Several state, regional and local units of government are affected by this project. Any public safety-related permits necessary for the construction of the proposed facilities will be obtained as discussed in Section 2.9.3 of the attached TSD. Mailing lists in the prescribed format for potentially affected landowners, public property landowners, government officials, local media contacts, libraries and other interested parties requiring project notification are provided in Appendix H, Lists 1 to 5.

H. CONCLUSION

Based on the material contained in this Joint Application and any subsequent material requested by the Commission and the Department or its staff relative to this application, ATC requests that the Commission issue a Certificate of Public Convenience and Necessity and other such authorizations as may be required to construct the transmission facilities as described and in the manner described in this Joint Application, and to determine the amount of the environmental impact fee and the allocation of that fee to the appropriate parties.

Similarly, ATC requests that the WDNR issue all the permits and authorizations as may be required to construct the transmission facilities as described and in the manner described in this Joint Application, within 30 days of the date that the PSCW issues its decision on the CPCN Application, pursuant to *Wis. Stat.* § 30.025(4).

Respectfully submitted this 16th day of May 2007

American Transmission Company LLC, and ATC Management Inc.

/s/ Stephen Parker

Stephen Parker
Manager, State Regulatory Affairs
ATC Management Inc.

**Paddock-Rockdale 345 kV Access Project
Technical Support Document**

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

TECHNICAL SUPPORT DOCUMENT

The information provided below follows the format of the Public Service Commission of Wisconsin (PSCW or Commission) and the Wisconsin Department of Natural Resources (WDNR or Department) "Information Requirements for Applications to Construct Electric Transmission Lines and Substations" (Part 2.00 Version 17A). The information provided relates to the proposed construction project for which authority is sought in this application.

2.1 ENGINEERING INFORMATION

The proposed Project will be constructed in Rock and Dane counties. The Project area is shown on the maps contained in Appendix A and in ATC's Utility Permit Application for permits from the Wisconsin Department of Natural Resources, Appendix E. An overview map of the project area showing the location of the Proposed and Alternate transmission line routes is located in Appendix A, Figure 1. The Proposed Route is comprised of route Segments 16, 14, 9, 8, 2, and 1. The Alternate Route is comprised of route Segments 15, 17, 13, 20, 11A, 19B, 19A, 18B, 18A, 7A, 5, 3D, 3C, 3B, 3A and 1.

Addition of the proposed 345 kV transmission line will require modification of the terminations at the existing Rockdale Substation. Other related substation modifications are discussed in Section 2.1.4.

2.1.1 Type and Location of Line Construction

Proposed Route

American Transmission Company proposes to construct 34.7 miles of new 345 kV transmission line from the existing Paddock Substation to the existing Rockdale Substation (new line designated W-10), consisting of both double- and triple-circuit steel monopole and lattice tower structures. The entire W-10 transmission line will be built on the existing W-4 (345 kV transmission line between Wempletown and Rockdale substations) ROW, provided the Proposed Route is selected by the Commission, with the exception of the Jana Airport area (Segment 2) and the 1.5-mile section of Segment 8 immediately north of Sheepskin Substation.

Paddock-Rockdale 345 kV Access Project Technical Support Document

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

The existing single-circuit steel H-Frame structures immediately west of the Paddock Substation (Segment 16) will remain in place. Heading north along Segments 14 and 9, the existing single-circuit H-Frame structures will be replaced with double-circuit steel monopoles from the Segment 16/14 intersection to the point where the existing steel lattice structures begin (just north of the southern Rock River crossing).

The existing steel lattice structures (Segment 8) continue north to a point approximately 1.5 miles north of the Sheepskin 69 kV Substation (at the railroad crossing). These structures will be modified and reused for the double-circuit 345 kV line. Presently, there is one 345 kV transmission line attached to the entire length of the lattice construction. There is also one energized 69 kV line (Y-12 from Sheepskin to Stoughton) attached to the lattice structures from the Sheepskin Substation north for approximately 1.5 miles. Transmission line Y-12 will be relocated to the east on a parallel alignment adjacent to the lattice line, thereby vacating the circuit location for the proposed 345 kV W-10 transmission line. The 69 kV transmission line conductor continues south of Sheepskin Substation for another 5.05 miles and is presently de-energized. This segment of conductor will be completely removed to provide space for the new W-10 line.

From the Y-12 split/railroad crossing to the north, W-4 is predominately built on single-circuit steel lattice structures. This configuration continues to the intersection of Interstate-39/90 (I-39/90). In this segment of the Proposed Route, all of the single-circuit steel lattice tower structures will be replaced with double-circuit steel monopoles. In addition, there are six (6) structures at the Jana Airport crossing (in Segment 2). Each existing 3-pole structure will be replaced with six new steel pole structures of similar height to support the existing W-4 and the new W-10 345 kV transmission lines. Property will be acquired to the south, paralleling the present alignment to accommodate the new W-4/W-10 circuit configuration. Replacement structures will not exceed existing structure heights, so as not to impede the continued use of the airport runways.

At I-39/90, the line turns north (Segment 1) towards Rockdale Substation. Currently, the W-4 line occupies the west side of the existing double-circuit steel pole transmission line, and X-31 (a 138 kV transmission line also referred to as "Russell to Rockdale") occupies the east side. ATC is proposing to install new triple-circuit steel poles. The X-31 circuit will be relocated as underbuild below the 345 kV double-circuit transmission lines.

Paddock-Rockdale 345 kV Access Project Technical Support Document

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

Alternate Route

Alternatively, ATC proposes to construct 36.1 miles of new 345 kV transmission line from the existing Paddock Substation to the existing Rockdale Substation (new line designated W-10), consisting of both double- and triple-circuit steel structures. The Alternate Route will exit the Paddock Substation and follow the X-39 (existing 138 kV transmission line also referred to as "Paddock to Townline Road") alignment through Segments 15 and 17. Here, ATC proposes to replace the existing monopole wood structures with double-circuit steel monopole structures. The existing X-39 transmission line will be transferred to the new steel monopole structures.

At an intersection point, X-39 is joined by X-12 (138 kV transmission line also referred to as "Townline Road to North Monroe"), where both lines turn east into Townline Road. This point designates the end of Segment 17 and the beginning of Segment 13. The proposed alignment for W-10 would continue north at this point on the X-12 alignment. The existing wood H-Frame structures on this segment of X-12 will be replaced by double-circuit steel monopole structures. The existing X-12 line will be relocated to the new steel double-circuit steel monopole structures. This line segment crosses West Plymouth Church Road, across the river to a point where X-12 takes a westerly turn.

Segment 20 takes a northwesterly course around the existing open water (ponds). This alignment will follow field boundary lines as closely as possible. The structures ATC proposes in this section will be single-circuit steel monopoles. There will be two 45-degree angle structures used to minimize the impact to an adjacent home (100 feet away) on West Eau Claire Road. At this point, the alignment turns east and follows West Eau Claire Road to the intersection of X-7/X-32.

In Segment 11A, the existing transmission lines X-7/X-32 are supported by double-circuit 138 kV steel lattice structures. Here, ATC proposes to replace the existing lattice structures with new triple-circuit steel monopole structures. Both of the existing 138 kV transmission lines will be transferred to the new steel monopoles in an underbuild location with the new W-10 345 kV transmission line above. This configuration is largely utilized until intersecting Y-38 (69 kV transmission line between Janesville General Substation and Parker High School Tap).

Paddock-Rockdale 345 kV Access Project Technical Support Document

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

At this point, the proposed 345 kV alignment will turn west and occupy the Y-38 route towards the Parker High School Tap. Coming off the X-7/X-32 alignment, the 345 kV transmission line will be single-circuit on new ROW for Segment 19B (one structure) to reduce pole heights at the X-7/X-32/X-21/Y-38 intersection. At Segment 19A, ATC proposes to double-circuit W-10 with the existing 69 kV transmission line Y-38. Y-38 is presently constructed on lattice towers which will be removed and replaced with double-circuit steel monopole structures. Segment 19A terminates at the Badger Pumping Station Tap.

Segment 18 continues north from the Badger Pumping Station Tap but is subdivided into two sections: 18B and 18A. Segment 18B is 0.4 mile in length, beginning at the tap and proceeding north to a point approximately 0.20 mile south of West Court Street. At this point 1.3-mile Segment 18A begins. The alignment turns west, following field lines to a point south of South Austin Road. The line then turns north paralleling Austin Road to a point approximately 0.12 mile north of West Mineral Point Road. The line then turns east until it intersects with the Y-151 (69 kV line also referred to as "McCue to Russell") alignment. This is the beginning of Segment 7A, approximately 0.12 mile north of the Parker School Tap.

At the Parker High School Tap, existing line Y-38 intersects with Y-151, which is near the intersection point of Segment 18A. Segment 7A begins at this junction and primarily continues north for 3.9 miles to a point on United States Highway (USH) 14 where Y-151 turns north into Russell Substation. The proposed line configuration in Segment 7A is double-circuit steel monopoles. Where paralleling USH 14, the new W-10 345 kV circuit will occupy the road side of the structures with the existing Y-151 circuit occupying the field side. The existing Y-151 wood pole structures will be removed and the existing conductor transferred to the new steel poles.

Segment 5 is a short 0.6-mile segment from the Y-151 line at USH 14 to Russell Substation. The proposed W-10 facilities in Segment 5 will be built on the east side of the existing transmission line corridor using single-circuit steel monopole construction.

North of Russell Substation, the 345 kV transmission line of the Alternate Route then continues along the existing X-31 alignment. Presently X-31 is supported on lattice structures originally designed for lower-voltage double-circuit operation. Because these structures are not physically capable of supporting the new circuit, the existing lattice structures that are carrying the existing X-31 will be removed. The existing X-31 conductor will be transferred onto new double-circuit steel monopole structures.

Paddock-Rockdale 345 kV Access Project
Technical Support Document

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

Segment 3D begins at Russell Substation and proceeds north to the intersection of Y-61 (69 kV transmission line from McCue Substation to Sheepskin Substation). Segment 3D is 4.62-miles long. The present X-31 Rock River crossing is narrow and there is limited space within which to install a new 345 kV circuit. Rather than impact land owners at this Rock River crossing, ATC proposes that the alignment turn northwesterly along the existing Y-61 alignment for a short distance. The proposed W-10 line will continue along an existing railroad alignment crossing the river at the same location as the railroad crossing. From the north side of the river, the route will follow a new alignment north until it intersects with East Dalby Road, a distance of approximately 0.57 mile. At this point, W-10 will turn east to occupy the existing Y-61 alignment for a distance of 0.34 mile, while Y-61 turns west to follow its existing route. This point marks the end of 1.2-mile Segment 3C. This entire section of Y-61, including the existing river crossing will be retired, and the Y-61 circuit transferred to the new double circuit steel monopole structures.

Segment 3B continues north to a point very near Diane Drive and turns east, continuing easterly until intersecting with X-31. This Segment will be single-circuit steel monopole structures constructed on new ROW. Segment 3B is 1.3 miles long.

The intersection with X-31 marks the beginning of Segment 3A. The new W-10 circuit will occupy the west side, and X-31 will occupy the east side of the new steel double circuit monopole structures, as they proceed north for a distance of 2.6 miles. The point where the alignment crosses I-39/I-90 marks the end of Segment 3A and the beginning of Segment 1.

Segment 1 is common to both the proposed and alternate routes. The existing double-circuit steel poles currently support both the X-31 transmission line and the existing W-4 345 kV transmission line. These structures will be replaced with a triple circuit steel monopole structure that will support the existing W-4 345 kV transmission line, the new W-10 345 kV transmission line, and the existing X-31 transmission line in an underbuild position.

Paddock-Rockdale 345 kV Access Project Technical Support Document

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

2.1.2 General Description of Proposed Line

The proposed transmission line will be constructed and operated as a 345 kV transmission line, primarily on weathering steel monopole double-circuit 345 kV structures with span lengths of approximately 900 to 1100 feet. On average, structure heights are expected to range between approximately 130 to 180 feet above ground, depending on the terrain and number of circuits. ATC intends to install 3-phase, 2156 kcmil 81/19 ACSR "Bluebird" (or equivalent) conductor on either route for the new W-10 line. All new structures will utilize V-String insulators to reduce the wind displacement of the transmission line conductors and minimize impacts to the ROW.

No distribution underbuild exists on the Proposed Route however; there are short segments of distribution underbuild on the Alternate Route in Segments 15, 7A and 5. It is anticipated that any distribution lines would be relocated to a separate alignment or placed underground.

Optical Ground Wire (OPGW) will be added as a static wire on the proposed or alternate route between Paddock and Rockdale substations to provide system status and relay protection communications. A review of potential use of non-ATC owned optical fiber already on transmission structures concluded that operation with leased fiber for ATC communication purposes, even if available, would be considerably more difficult and costly than a separate system.

2.1.2.1 and 2.1.2.2 Size and Configuration of Lines

Proposed Route

The Proposed Route transmission line configuration is primarily double-circuit steel monopole configuration on the existing W-4 345 kV transmission ROW. ATC proposes to construct a double-circuit 345 kV transmission line (W-4/W-10) on new weathering steel monopole and existing steel lattice structures. One exception to the double-circuit configuration occurs at the Jana Airport section (Segment 2) where the lines will be horizontally configured to reduce the height of transmission structures and maintain glide path clearances. Segment 1 will be a triple-circuit line with the existing 138 kV line X-31 installed as an underbuild circuit. A detailed segment-by-segment description follows.

Paddock-Rockdale 345 kV Access Project Technical Support Document

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

ATC proposes to install a new optical ground wire, connecting Paddock and Rockdale substations. Currently, outside of Paddock Substation is a fiber optic wire owned by Kentucky Data Link, Inc. (KDL) coming up from the south along the W-4 line. ATC proposes to install a new 12-fiber OPGW out of Paddock and occupy the eastern shield wire position to the north. Where the 345 kV transmission line alignment crosses the existing X-12 line in Segment 14, the KDL fiber optic drops off the 345 kV structures and follows X-12 towards Janesville. From this point north, ATC will utilize dual shield wires comprised of one 12-fiber OPGW and one 7/16-inch extra-high-strength (EHS) cable. This combination will continue all the way to the Interstate-39/90 crossing, where the KDL fiber attaches once again, coming up from the south along X-31. Therefore, from the I-39/90 crossing to Rockdale will be a KDL fiber optic wire in one shield wire position and a 24-fiber OPGW line for ATC in the other shield wire position. The 24-fiber OPGW will include the 12 optical fibers from Paddock Substation and the 12 optical fibers from Russell Substation.

Proposed Route (Segment Description)

Segment 16 (Proposed Route). Segment 16 is a 0.4-mile three-span section beginning at the Paddock Substation and traveling westerly, intersecting the existing W-4 345 kV line from Wempletown to Rockdale Substation. Typical structures are steel H-frames as shown on drawing ER-10-000080-046 located in Appendix B, Figure 9, Page 6 of 11. De-energized 2156 kcmil ACSR "Bluebird" conductor is already installed on this segment, terminating at Paddock Substation which will be connected to the new W-10 line at the intersection of Segment 14/16 (existing 90-degree angle structure #20). The scope of work on Segment 16 is limited to replacing one existing EHS shield wire with the proposed OPGW.

Paddock-Rockdale 345 kV Access Project Technical Support Document

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

Segments 9 & 14 (Proposed Route). The line lengths for Segments 9 and 14 are 7.9 miles and 8.3 miles, respectively. Segment 14 begins three spans outside of the Paddock Substation. At this point, the new W-10 Paddock 345 kV line travels north. The existing steel H-Frame single-circuit structures on both Segment 14 and Segment 9 will be removed and replaced with double-circuit steel monopole structures. The intent is to construct the new monopoles close to the existing H-frames to minimize the impact on current land use. There will be locations where intermediate structures will be required between the long-span H-frames in order to maintain the existing 150-foot ROW width. In these locations, some re-spanning may occur to optimize design and minimize impacts. Existing W-4 conductor (2156 kcmil ACSR "Bluebird") will be transferred. The typical structure to be used on the segment is shown on drawing ER-10-000080-043 located in Appendix B, Figure 9, Page 3 of 11.

Segment 8 (Proposed Route). This Segment begins at the northern end of Segment 9 where the existing 345 kV transmission line transitions from single-circuit steel H-Frame structures to double-circuit lattice structures. The total length of this segment is 6.3 miles. The W-4 transmission line solely occupies these lattice structures for the first approximately 4.7 miles. Presently, 69 kV line Y-12 occupies one of the circuit positions on the double-circuit lattice structures beginning at the Sheepskin Substation and continuing north for approximately 1.5 miles until reaching the intersection of the Wisconsin & Southern Railroad tracks. At this point, the Y-12 line departs from the lattice structures and turns in a north-westerly direction into Stoughton Substation.

The proposed configuration will relocate line Y-12 from the existing lattice structures to new wood pole structures just east of the lattice tower alignment for the 1.5-mile distance from the Sheepskin Substation to the intersection with the railroad. An additional 30 feet of new ROW will be required for this 1.5-mile length of the Y-12 relocation. The remaining 69 kV de-energized conductor south of Sheepskin Substation will be removed. Once vacated, the new W-10 circuit will be installed in the former 69 kV position. Minor modifications to the existing lattice towers will be required including replacement of two members on each face of the tangent lattice towers (8 members per structure total). This enhancement is needed to comply with ATC Design Criteria, and to maintain equivalent capacity to the tangent lattice towers south of Paddock Substation. Existing dead-end lattice tower structures require no reinforcement.

Paddock-Rockdale 345 kV Access Project

Technical Support Document

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

Proposed 69 kV structures will be wood poles with line spans designed to minimize impacts to the existing landscape. Drawing ER-10-000080-050 (located in Appendix B, Figure 9, Page 10 of 11) illustrates the conductor location of the new W-10 circuit, as well as the adjacent 69 kV line Y-12.

Segment 2 (Proposed Route). Segment 2 begins where the 69 kV line Y-12 intersects with the existing W-4 line. The 345 kV alignment proceeds north to a 90-degree angle structure that turns east. This east-west portion of this segment crosses near the Jana Airport runway. There are currently six 60-foot-tall 3-pole wood structures in the Jana Airport area. These structures will be replaced with six sets of steel 60-foot-tall steel structures, consisting of two 3-pole structures per set. The configuration is depicted on drawing ER-10-000080-051 located in Appendix B, Figure 9, Page 11 of 11).

The alignment continues east until it intersects with the double-circuit W-4/X-31 line at I-39/90. This Segment is 4.2 miles long. Throughout a majority of Segment 2, design plans are to locate new monopoles close to existing single-circuit lattice H-frames to minimize the impact on current land use. The transmission line will be constructed using double-circuit steel monopole configuration found on drawing ER-10-000080-043 located in Appendix B, Figure 9, Page 3 of 11.

Segment 1 (Proposed Route). This Segment begins where the existing W-4/X-31 line crosses I-39/90. This line Segment travels 7.6 miles north to the Rockdale Substation. There is an existing 138 kV line (X-31) on common structures with W-4. Two existing 138 kV phases will be transferred and one new phase will be installed at an underbuild position on the new structures. New W-10 conductor will be installed parallel to the transferred W-4 conductor. (See drawing ER-10-000080-041 located in Appendix B, Figure 9, Page 1 of 11, for proposed structure type). Design plans are to locate the new monopoles close to existing poles to minimize the impact on current land use.

Paddock-Rockdale 345 kV Access Project Technical Support Document

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

Alternate Route

The Alternate Route configuration predominantly follows existing transmission ROW. Many of the existing circuits will be transferred to new weathering steel monopole structures; however, the existing line X-12 266.8 kcmil "Partridge" 26/7 ACSR conductor will be replaced with T2-477 kcmil "T2-Hawk" 26/7 ACSR conductor in Segment 13. Structures in Segment 11 will be designed for T2-556.5 kcmil "T2-Dove" 26/7 ACSR conductor, but existing 397.5 kcmil "Ibis" 26/7 ACSR conductor will be transferred. Existing lines on the Alternate Route are either 138 kV or 69 kV transmission lines, with the exception of Segment 1, which is an existing double-circuit 345/138 kV transmission line.

ATC proposes to install a new optical ground wire, connecting Paddock and Rockdale substations. Accommodations for the KDL fiber optic wire currently found on portions of X-12, X-7/X-32 and all of X-31 will be accommodated in the traditional shield wire positions. In Segments 3 and 1 (line X-31) where ATC currently has an existing OPGW, it will be replaced with a new 24-fiber wire.

Alternate Route (Segment Description)

Segment 15 (Alternate Route). Segment 15 begins at Paddock Substation and is 4.0 miles in length. The proposed alignment for W-10 follows the existing line X-39 centerline from the Paddock Substation to West Cherry Road. Line X-39 structures are single-circuit wood poles that must be removed. Existing 795 kcmil 26/7 ACSR "Drake" conductor will be transferred to new double-circuit steel monopole structures. Proposed monopole spans would be significantly lengthened when compared to existing wood pole spans. There are short distances of distribution underbuild in this section. Existing underbuild will be relocated either underground or to a separate alignment. The typical structure to be used on this segment is shown on drawing ER-10-000080-043 located in Appendix B, Figure 9, Page 3 of 11.

Paddock-Rockdale 345 kV Access Project Technical Support Document

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

Segment 17 (Alternate Route). Segment 17 is a continuation of line W-10 from Segment 15 beginning at West Cherry Road going north along the line X-39 alignment to the intersection point where it encounters line X-12. Segment 17 is 0.8 mile long. The existing X-39 structures are single-circuit wood poles that must be removed; existing 795 kcmil 26/7 ACSR "Drake" conductor will be transferred to new double-circuit steel monopole structures. Proposed monopole spans would be significantly lengthened when compared to existing wood pole spans. The typical structure to be used on this segment is shown on drawing ER-10-000080-043 located in Appendix B, Figure 9, Page 3 of 11.

Segment 13 (Alternate Route). Segment 13 follows the existing line X-12 alignment from the 90-degree angle structure into Townline Road to an angle structure where X-12 turns to the northwest. The overall length for Segment 13 is 1.6 miles. Currently, the X-12 alignment is occupied by wood pole H-frame structures. Existing X-12 conductor (266 kcmil 26/7 ACSR "Partridge") and associated wood poles will be removed and new T2-477kcmil 26/7 ACSR "T2-Hawk" 138 kV conductor will be installed on new monopole steel double circuit structures. Where possible, proposed monopole spans would be lengthened where possible when compared to existing H-frame wood pole spans. The typical structure to be used on Segment 13 is shown on drawing ER-10-000080-043 located in Appendix B, Figure 9, Page 3 of 11.

Segment 20 (Alternate Route). Segment 20 is 1.5 miles long and begins at a point where line X-12 turns northwestward. The alignment for Segment 20 takes a northerly course to the west of the adjacent ponds to the intersection with West Eau Claire Road and then turns east following West Eau Claire Road to the intersection with lines X-7/X-32 at the southern end of Segment 11A. The typical structure to be used in this segment is shown on drawing ER-10-000080-045 located in Appendix B, Figure 9, Page 5 of 11.

Paddock-Rockdale 345 kV Access Project Technical Support Document

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

Segment 11A (Alternate Route). Segment 11A begins at a point near South Pitt Road at a double-circuit steel lattice structure supporting both the X-7 and X-32 138 kV transmission lines. The new W-10 transmission line would be overbuilt for the 4.0-mile distance of the existing 138 kV lattice tower alignment on Segments 11A.

The existing double-circuit lattice 138 kV structures will be removed and replaced with monopole steel triple-circuit structures. The existing X-7/X-32 conductors (397 kcmil 26/7 ACSR "Ibis") will be transferred by re-installing in a double-circuit underbuild configuration with the single-circuit 345 kV transmission line. (See Drawing ER-10-000080-044 located in Appendix B, Figure 9, Page 2 of 11). New structures primarily will be placed at structure-for-structure locations to minimize land impacts. Finally, there will be a section of line approximately 1.25 miles in length where spans and structure heights will be reduced to accommodate the Rock County Airport glide path. The typical reduced-height structure in this segment is shown on drawing ER-10-000080-048, located in Appendix B, Figure 9, Page 8 of 11. A map of the Rock County Airport Height Limitation Zoning Map is located in Appendix A, Figure 17.

Segment 19 (Alternate Route). The total line length for Segment 19 is 0.9 mile, consisting of 0.2-mile Segment 19B and 0.7-mile Segment 19A. Beginning at a point just south of where lines X-7/X-32 intersect with line Y-38, the proposed 345 kV alignment will turn west off the X-7/X-32 alignment onto its own ROW on Segment 19B, which will eliminate the need for tall structures at the X-7/X-32/X-21/Y-38 intersection. The 345 kV transmission line would then intersect with Y-38 and follow that alignment to the Badger Pumping Station Tap. Existing Y-38 steel lattice towers will be removed; however, the existing 4/0 AWG 6/1 ACSR "Penguin" conductor will be transferred to new double-circuit steel monopole structures. The typical structure to be used on the Segment 19B is shown on drawing ER-10-000080-049 located in Appendix B, Figure 9, Page 9 of 11. The typical structure to be used on Segment 19A is shown on drawing ER-10-000080-043 located in Appendix B, Figure 9, Page 3 of 11. Proposed monopole spans would be approximately equivalent when compared to existing lattice spans.

Paddock-Rockdale 345 kV Access Project
Technical Support Document

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

Segment 18 (Alternate Route). Segment 18 consists of two sections: 18B (0.4 miles) and 18A (1.2 miles) beginning at the Badger Pumping Station Tap and proceeding north to the Parker High School Tap. Existing line Y-38 lattice towers on Segment 18B will be removed; however the existing 3/0AWG 6/1 ACSR "Pigeon" conductor will be transferred to new double-circuit steel monopole structures. Proposed monopole spans would be shortened when compared to existing lattice spans. The proposed typical structure for Segment 18B is shown on drawing ER-10-000080-047 located in Appendix B, Figure 9, Page 7 of 11. Segment 18A will be a single-circuit steel monopole structure configuration. The typical structure is shown on drawing ER-10-000080-045 located in Appendix B, Figure 9, Page 5 of 11.

Segment 7A (Alternate Route). Segment 7A is 3.9 miles in length. Beginning approximately 600 feet north of the Parker High School Tap, and proceeding north in the alignment that is presently occupied by the 69 kV circuit Y-151, Segment 7A terminates at the lines X-21/X-32/Y-151 intersection along USH 14. Existing wood poles will be removed, but the existing T2-4/0 AWG 6/1 ACSR "T2-Penguin" conductors are to be transferred to the new double-circuit steel monopole structures. Proposed monopole spans would be significantly lengthened when compared to existing wood pole spans. There are short segments of distribution underbuild in this section which will be relocated either underground or to a separate alignment. The typical structure to be used on the Segment can be seen on drawing ER-10-000080-043 located in Appendix B, Figure 9, Page 3 of 11.

Segment 5 (Alternate Route). Beginning at the intersection of lines Y-151 and X-21/X-32 at USH14, 0.6-mile Segment 5 will be built on the eastern side of the existing Russell Substation/X-21/X-32/Y-151 transmission ROW and go north to the Russell Substation. (Line W-10 will bypass Russell Substation on the east side). Segment 5 will be constructed using a single-circuit monopole structure configuration shown on drawing ER-10-000080-044 located in Appendix B, Figure 9, Page 4 of 11.

Paddock-Rockdale 345 kV Access Project Technical Support Document

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

Segment 3 (Alternate Route). Segment 3 is 9.8 miles long, beginning at Russell Substation and continuing north to the intersection with line W-4 at I-39/90. Segment 3 is divided into four sub-segments: 3D, 3C, 3B and 3A as described below.

Segment 3D: Segment 3D is approximately 4.6 miles long, beginning at the Russell Substation and continuing north along the line X-31 alignment to approximately ¼-mile south of the Rock River, where line X-31 crosses an abandoned railroad (Wisconsin Southern) track and intersects with the existing Y-61 line. New double-circuit steel monopole structures will be installed in close proximity to existing structures; however, some adjustments to span lengths may occur to optimize design and minimize impacts. The existing 1033 ACSR X-31 conductor will be transferred and new 2156 kcmil ACSR "Bluebird" conductor will be installed for W-10. Refer to drawing ER-10-000080-043 located in Appendix B, Figure 9, Page 3 of 11, for the configuration.

Segment 3C: Segment 3C is a 1.2-mile loop around the existing section of line Y-61. Line Y-61 is presently a single wood pole line with horizontal post insulators. This re-routed section of line Y-61 will be removed and new T2-4/0 AWG 6/1 ACSR "T2-Penguin" conductor will be installed on the new double-circuit steel monopole structures. The existing poles, hardware, and 336.4 kcmil "Linnet" 26/7 ACSR conductor will be removed. Segment 3C configuration can be found on drawing ER-10-000080-043 located in Appendix B, Figure 9, Page 3 of 11. The existing Y-61 Rock River crossing will be relocated further west, and the new lines W-10/Y-61 river crossing will be installed adjacent to the railroad crossing.

Segment 3B: Segment 3B is a 1.3-mile single-circuit line for W-10 only. It begins at the location where line Y-61 line is re-routed along Segment 3C. Segment 3B proceeds east, and then north along River Road, then east to rejoin the X-31 ROW. The structure configuration for Segment 3B is shown on drawing ER-10-000080-044 located in Appendix B, Figure 9, Page 4 of 11.

Paddock-Rockdale 345 kV Access Project Technical Support Document

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

Segment 3A: Segment 3A is approximately 2.6-miles long and continues in a northerly direction to I-39/I-90. The existing line X-31 double-circuit lattice structures are insufficient for 138 kV/345 kV operation and therefore will be removed. New double-circuit steel monopole structures will be installed in close proximity to existing structures; however, some adjustments to span lengths may occur to optimize design and minimize impacts. The existing 1033 kcmil ACSR X-31 conductor will be transferred and new 2156 kcmil ACSR "Bluebird" conductor will be installed for W-10. Refer to drawing ER-10-000080-043 located in Appendix B, Figure 9, Page 3 of 11, for the configuration.

Segment 1 (Alternate Route): Segment 1 begins where the existing W-4/X-31 line crosses I-39/90. Segment 1 proceeds 7.6 miles north to the Rockdale Substation. An existing 138 kV line (X-31) is presently positioned on common structures with W-4. Two of the existing 138 kV phases will be transferred and one new phase will be installed at an underbuild position on the new structures. New W-10 conductor will be installed parallel to the transferred W-4 conductor. (See drawing ER-10-000080-041 located in Appendix B, Figure 9, Page 1 of 11, for proposed structure type.) Design plans are to locate the new monopoles very close to existing poles locations to minimize the impact on current land use.

2.1.3 Studies of the Problem and Possible Solutions

ATC's *Planning Analysis of the Paddock-Rockdale Project* ("Planning Analysis") studied the problem of how transmission congestion, insufficient transfer capacity, and lack of access to additional generation resources contribute to higher energy costs for ATC's customers. The *Planning Analysis* also evaluates the costs and benefits of various options that address these problems (see Appendix C, Exhibit 1 of the TSD).

2.1.3.1 System Normal

This section is not applicable to this Joint Application.

2.1.3.2 Single Contingencies

This section is not applicable to this Joint Application.

Paddock-Rockdale 345 kV Access Project Technical Support Document

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

2.1.3.3 Alternative Network Solutions

Section 8 and Tables 36 and 37 of ATC's *Planning Analysis* present detailed information about the alternative network solutions. In summary, the system alternatives are those that were considered in the 2005 Access Initiative (PSC Docket 137-EI-100). These are:

- Alternative #1 - South: a new Paddock-Rockdale 345 kV circuit.
- Alternative #2 - Low voltage: projects less than 345 kV.
- Alternative #3 - West: a new Prairie Island-North La Crosse-Columbia 345 kV line.
- Alternative #4 - South: a new Byron-North Monroe-West Middleton-North Madison 345 kV line.
- Alternative #5 - Southwest: a new Salem-Spring Green-West Middleton-North Madison 345 kV line with an uprate of the Salem-Maquoketa 161 kV line.

The *Commission Staff Final Report on Transmission Access* in the 2005 Access Initiative docket stated, "... preference should be given to the EHV access projects that provide the greatest net ratepayer economic benefit, all else being equal." Based on this determination and consideration of the performance of the alternatives evaluated, ATC has pursued Alternative #1, the Paddock-Rockdale project.

ATC revised its estimated construction costs and also adjusted them to reflect a 2010 in-service date as shown in Table 36 (Revised Construction Cost of Alternative Projects) of the *Planning Analysis*. The relative ranking of the five alternatives remained the same with the cost of the Paddock-Rockdale project being 16% to 41% of the cost of the other EHV alternatives.

Based on the most recently available information, ATC also assessed the performance of the five alternatives. Alternatives #3, #4 and #5 were not as cost-effective as the Paddock-Rockdale project with Alternative #3 more than six times more costly. While Alternatives #4 and #5 did provide system benefits, they did not compare favorably with Paddock-Rockdale when their capital cost and longer completion time were taken into account.

Paddock-Rockdale 345 kV Access Project Technical Support Document

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

When compared with Alternative #2 (the Low-Voltage Option), the net benefits of the Paddock-Rockdale project outperformed Alternative #2 in the great majority of the cases. This is summarized in Table 37 (Analysis of Paddock-Rockdale vs. Low Voltage Option – NPV of Net Savings).

2.1.3.3.1 Prior Relevant Regional Studies

Section 3 of the *Planning Analysis* provides specific information about state and regional studies and activities relevant to this project. ATC regularly coordinates with adjoining transmission owners and MISO to access regional transmission needs. ATC commenced its Access Initiative to access the value of expanding the ATC transmission system to reduce congestion costs and to improve access to generation sources outside the ATC system. Working with Commission staff, MISO planners, adjoining transmission owners, and numerous Wisconsin utility stakeholders and other interested parties, ATC has determined that the Paddock-Rockdale project is the most appropriate means to reduce congestion and improve access.

2.1.3.3.2 Reliability and Performance Benefits of Solutions

Sections 6, 7, and 8 of ATC's *Planning Analysis* provide detailed information about the economic and reliability benefits of the project and available options.

2.1.3.4 Electrical Losses

Section 6.1.6 Tables 14 to 16 and Section 6.6 of the *Planning Analysis* provide detailed information about the impact of the project on electrical losses.

2.1.3.5 Short Circuit, Stability, and Thermal Analyses

This section is not applicable to this Joint Application.

2.1.3.6 Distribution Substation Need and Alternatives

This section is not applicable to this Joint Application.

Paddock-Rockdale 345 kV Access Project Technical Support Document

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

2.1.3.7 Planning Simulation Data (PSSE/Power World)

A compact disc containing the input and output files from ATC's PROMOD (New Energy Associates software which provides a detailed generator and portfolio modeling system, with nodal LMP forecasting and transmission analysis) analysis of the project for 2011 and 2016 was filed confidentially with the PSCW in this Docket on 4/16/07. A list of the PROMOD input and output files for the 2011 and 2016 reference cases are located in Appendix C, List 1.

2.1.4 Substation Facilities

In order to integrate the proposed new transmission line, modifications will be required at the Paddock, Rockdale and Christiana substations. The work at the Paddock and Christiana substations will occur within the existing substation fences. The Rockdale Substation site will require site expansion of over 1 acre. Work at each of the substations includes:

Paddock Substation:

- Install new protection and control relay panels for Transformer 91.
- Upgrade protection and control panel to accommodate the new Paddock-Rockdale line W-10.
- Remove a coupling capacitor voltage transformer, wave trap, and line tuner no longer required on the spare line termination being used for the new Paddock-Rockdale line W-10.

The proposed plan view layout of the Paddock Substation is shown in Appendix B, Figure 4.

Christiana Substation:

- Replace five 138 kV gas circuit breakers at existing breaker locations to accommodate additional fault current levels from the new 345 kV transmission line and the replaced Transformer 22 at Rockdale Substation.

The proposed equipment layout of the Christiana Substation is shown in Appendix B, Figure 2.

Paddock-Rockdale 345 kV Access Project Technical Support Document

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

Rockdale Substation:

- Add a new 345 kV bus section, two 3000-amp, SF₆ circuit breakers and associated disconnect switches, and a new transmission line dead-end structure.
- Install new transmission line dead-end structure near the existing bus to accommodate proposed Paddock-Rockdale line W-10. Connect the Paddock-Rockdale line to the new dead-end structure.
- Relocate the Rockdale-Wempletown 345 kV line W-4 to the new bus section and connect to the new dead-end structure.
- Expand the existing substation for the new bus section and to meet WDNR requirements for water retention.
- Replace existing 336 MVA, 345/138 kV Transformer 22 with a new 300/400/500 MVA, 345/138 kV transformer.
- Replace three 138 kV gas circuit breakers not capable of interrupting the additional fault current from the new 345 kV line and replace Transformer 22. Two additional 138 kV breakers will be replaced prior to this project due to separate pre-existing fault duty issues.
- Install new protection and control relay panels. Revise connections to existing relaying from new breakers.
- The Paddock-Rockdale line will allow for a potential breaker position for the proposed Rockdale-West Middleton line (Docket 137-CE-147)

The proposed layout of the Rockdale Substation is shown in Appendix B, Figure 6.

2.1.5 Contractual Agreements

There are no contractual agreements with developers related to this project.

2.1.6 Transmission Service Agreements

Transmission Service over the proposed new transmission line will be provided under the provisions of the existing Network Integrated Transmission Service Agreements between ATC and its Network Customers, and for Point-to-Point transmission service customers in accordance with the terms of the Open Access Transmission and Energy Markets Tariff of the Midwest Independent Transmission System Operator, Inc.

**Paddock-Rockdale 345 kV Access Project
Technical Support Document**

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

2.1.7 Transmission Costs

2.1.7.1 Segment Cost Estimate (including construction, removal, & maintenance, facilities, land, easements, demolition & salvage, environmental impact fees)

2.1.7.1.1 Capital Costs

2.1.7.1.2 Operation and Maintenance

2.1.7.1.3 Removal (if applicable)

2.1.7.1.4 Nodal or Transition Cost for Route Segments (if applicable)

The information requested in the four sub-parts of Section 2.1.7.1 is addressed in Section 2.1.7.3 – Project Costs for 345 kV or Greater.

2.1.7.2 Route Cost Estimate (for all voltage levels, for each route)

2.1.7.2.1 Transmission Line

2.1.7.2.2 Distribution System Modifications (see below)

2.1.7.2.3 Substation Construction

2.1.7.2.4 Total Capital Costs

The information requested in Sections 2.1.7.2.1 (Transmission Line), 2.1.7.2.3 (Substation Construction), and 2.1.7.2.4 (Total Capital Costs) is addressed in Section 2.1.7.3 – Project Costs for 345 kV or Greater. Section 2.1.7.2.2 is addressed below.

2.1.7.2.2 Distribution System Modifications

No distribution system modifications are proposed on the Proposed Route.

Three short segments of existing distribution lines along the Alternate Route would require undergrounding or relocation as follows (costs are included in Section 2.1.7.3 “Other Project Costs” table below):

- Segment 15 – An approximately 0.25-mile section of single-phase distribution underbuild on transmission line X-39 along Newark Road could be relocated underground at a cost of \$9,800.

Paddock-Rockdale 345 kV Access Project Technical Support Document

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

- Segment 15 – An approximately 1.0-mile section of single-phase distribution underbuild on transmission line X-39 along Nye School Road could be relocated underground at a cost of \$96,000.
- Segments 5 and 7A – Approximately 1.5-mile section of three-phase distribution underbuild on transmission lines X-32/X-21/Y-151 near Russell Substation along STH 14 could be relocated underground at a cost of \$362,700.

2.1.7.3 Project Costs for 345 kV or greater

The following costs are presented by overall route. The cost for each route is broken down based on materials, construction, and right-of-way. Materials values include all basic line material and all additional cost with the exception of ROW and construction. The Proposed Route costs assume working under optimized energized conditions where structure replacement would be done with the existing 345 kV circuit energized - except on Segment 2 and on heavy-angle and dead-end structures. The costs for the Alternate Route assume de-energized construction, with the exception of Segment 1 which would have W-4 energized for some portions of construction.

Risk Assessment

Project cost estimates provided within construction applications have historically included an allowance for contingency (usually 10% percent of total project cost) to allow for *unforeseen* project risk associated with the preliminary level of design completed at the time an application is submitted to the Commission for review.

The project estimates shown in this application include an additional allowance of \$12,622,400 for the Proposed Route and \$15,726,600 for the Alternate Route to address the cost of *identified* project risk associated with each route. The identified project financial risks are associated with licensing and construction (such as licensing delay, right-of-way acquisition, environmental factors, material cost, labor cost and availability, etc.) and were quantified based on their estimated cost and probability of occurrence before inclusion in the project estimate.

If final engineering identifies additional risk that exceeds the amounts reflected in this application, it will be promptly reported to the Commission.

Paddock-Rockdale 345 kV Access Project Technical Support Document

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

Project Cost Summary by Category

The following table summarizes the various Project cost components by category (Transmission, Substation, Precertification/Licensing, Environmental, Removal, and Operation & Maintenance).

Item	Proposed Route Costs	Alternate Route Costs
Transmission	\$98,077,900	\$163,223,400
Substation*	\$13,838,000	\$13,838,000
One Time 5% Environmental Impact Fee	\$5,595,800	\$8,853,100
Annual 0.3% Environmental Impact Fee (During 2-Year Construction Period Only)	\$671,500	\$1,062,400
Removal	\$2,762,000	\$10,400,000
Pre-certification	\$5,051,300	\$5,051,300
Substation Costs (unrelated to W-10)	\$3,013,300	\$3,013,300
Operation and Maintenance (During Construction Period Only)	\$3,696,400	\$5,362,600
Total Project Gross Cost	\$132,706,200	\$210,804,100

* Does not include \$3,013,300 of substation costs for work not required for addition of line W-10.

2.1.7.3.1 Transmission (material, labor and other)

The following tables provide the total cost for the Project. Project costs for transmission line and substation construction have been combined and then categorized by transmission line voltage. Project costs for environmental fees, removal, and operating and maintenance expense during construction are categorized as Other Project Costs. The Gross Project Cost is the sum of Project costs by voltage and Other Projects costs.

Paddock-Rockdale 345 kV Access Project
Technical Support Document

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

Transmission Lines by Voltage	Project Cost Categories	Proposed Route Costs	Alternate Route Costs
W-10 Paddock to Rockdale New 345 kV Transmission Line	Material		
	Structures	\$26,586,700	\$33,447,700
	Wire	\$4,837,100	\$6,758,100
	Other	\$3,590,100	\$6,591,000
	Labor		
	Site	\$1,461,400	\$1,674,300
	Below Grade	\$5,294,000	\$12,660,000
	Above Grade	\$23,861,500	\$30,364,700
	Other		
	Real Estate	\$7,910,500	\$25,940,000
	Environmental	\$2,306,800	\$2,444,800
	Technical Support Services	\$7,736,900	\$16,082,500
	Wetland Accessibility (Matting)	\$3,420,500	\$4,133,000
	Other	\$6,516,200	\$12,972,600
	Independent Environmental Monitors	\$1,100,800	\$1,100,800
	Subtotal	\$94,622,500	\$154,169,500
W-4 Rockdale to Wempletown 345 kV Transmission Line	Material		
	Structures	\$0	\$0
	Wire	\$0	\$0
	Other	\$1,000,400	\$313,600
	Labor		
	Site	\$0	\$0
	Below Grade	\$0	\$0
	Above Grade	\$0	\$0
	Other	\$92,200	\$155,300
	Subtotal	\$1,092,600	\$468,900
138 kV Transmission Line Work	Material		
	Structures	\$0	\$0
	Wire	\$321,300	\$321,300
	Other	\$216,300	\$2,405,400
	Labor		
	Below Grade	\$0	\$0
	Above Grade	\$580,400	\$1,843,400
	Other	\$85,600	\$435,600
	Subtotal	\$1,203,600	\$5,005,700

**Paddock-Rockdale 345 kV Access Project
Technical Support Document**

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

Transmission Lines by Voltage	Project Cost Categories	Proposed Route Costs	Alternate Route Costs
69kV Transmission Line Work	Material		
	Structures	\$100,000	\$0
	Wire	\$573,700	\$1,750,600
	Other	\$173,300	\$1,293,200
	Labor		
	Below Grade	\$0	\$0
	Above Grade	\$308,700	\$85,500
	Other	\$3,500	\$450,000
	Subtotal	\$1,159,200	\$3,579,300

Transmission Line Projects Subtotal	\$98,077,900	\$163,223,400
--	---------------------	----------------------

2.1.7.3.2 Substation (material, construction & other)

The costs for substation construction only is categorized by substation and presented below. The cost of substation construction is included in the Project cost by transmission voltage in Section 2.1.7.3.1 above.

Substation	Project Cost Categories	Proposed Route	Alternate Route
Rockdale 345kV Substation	Material	\$9,095,600	\$9,095,600
	Construction	\$4,799,200	\$4,799,200
	Other	\$956,900	\$956,900
	Subtotal	\$14,851,700	\$14,851,700

Substation	Project Cost Categories	Proposed Route	Alternate Route
Paddock 345kV Substation	Material	\$170,000	\$170,000
	Construction	\$289,100	\$289,100
	Other	\$12,400	\$12,400
	Subtotal	\$471,500	\$471,500

Christiana 138kv Substation	Material	\$815,800	\$815,800
	Construction	\$670,700	\$670,700
	Other	\$41,600	\$41,600
	Subtotal	\$1,528,100	\$1,528,100
Substation Projects Subtotal		\$16,851,300	\$16,851,300

**Paddock-Rockdale 345 kV Access Project
Technical Support Document**

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

2.1.7.3.3 Environmental Protection & Licensing

The cost for internal environmental monitors, independent environmental monitors, and agricultural protection is included in the Environmental project cost category under the "W-10 Paddock to Rockdale New 345 kV Transmission Line" category in Section 2.1.7.3.1 above.

2.1.7.3.3.1 Environmental Monitoring Services

2.1.7.3.3.1.1 Cost for Internal Environmental Monitors

Internal environmental monitors are responsible for inspection and monitoring of construction activities in accordance with environmental permit requirements and regulations as applicable to the Project. They will work directly with ATC staff and ATC contractors, providing advice, consultation, and reports on environmental matters as they relate to construction activities. The estimated cost for internal environmental monitors is \$1,100,800 for either route. This estimate assumes that two monitors will be required to allow construction to proceed at two segments and that monitors will work six days a week for approximately 2 years of construction.

2.1.7.3.3.1.2 Cost for Independent Environmental Monitors

The estimated cost for independent environmental monitors is \$1,100,800 for either route based on the assumption that the costs will be the same as the ATC environmental monitors.

2.1.7.3.3.1.3 Agricultural Protection

The estimated cost for agricultural disease protection is \$160,000 for either route. Farm soil restoration is estimated to cost approximately \$880,000 for the Proposed Route and \$580,000 for the Alternate Route.

2.1.7.3.1.1.4 Environmental Protection Wetlands, etc.

The estimated cost for wetland accessibility (matting and invasive species mitigation) is \$2,306,800 for the Proposed Route and \$2,444,800 for the Alternate Route.

**Paddock-Rockdale 345 kV Access Project
Technical Support Document**

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

2.1.7.3.3.2 Technical Support Services

The technical support services portion of the transmission line estimate summarizes costs associated with engineering and project management, including the payment of sales taxes. The estimated cost for technical support services on the Proposed Route is \$7,736,900 and for the Alternate Route is \$16,082,500.

2.1.7.3.3.3 Costs Listed as Licensing and Regulation

(Duplicate of Section 2.1.7.4)

2.1.7.3.4 FEES [DOA Wisc. Stat. §196.491(3g)]

The estimated one-time 5% environmental impact fee is \$5,595,800 for the Proposed Route and \$8,853,100 for the Alternate Route. The estimated annual 0.3% environmental impact fee is \$671,500 for the Proposed Route and \$1,062,400 for the Alternate Route, during the construction period only when the fee is capitalized. These figures are also shown in the "Other Project Costs" table in Section 2.1.7.3 above. The estimated environmental impact fees for the Proposed and Alternate Routes are shown in Tables 1 and 2 of Appendix J.

2.1.7.4 Licensing & Regulation

The estimated licensing and regulation capital costs for this project are \$5,051,300.

2.1.7.5 Regional Projects – Cost Benefit Analysis & Cost Allocation Cost

Sections 6 and 7 of the *Planning Analysis* provide the cost-benefit analysis of this project. Section 3.4 of the *Planning Analysis* provides information about regional cost-sharing for this project.

2.1.7.6 Cost of Electrical Losses & Assumptions

Section 6.1.6, Tables 14 to 16, and Section 6.6 of the *Planning Analysis* set forth the assumptions and economic analysis regarding the impact of this project on electrical losses.

**Paddock-Rockdale 345 kV Access Project
Technical Support Document**

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

2.1.8 Construction Schedule and Seasonal Construction Constraints

American Transmission Company projects completion of the proposed Paddock-Rockdale Project on the following schedule:

Activity	Expected Schedule
File Project Plan	February 2007
File CPCN Application	May 2007
Receive PSCW Order	June 2008
Rockdale and Christiana Substations Complete Detailed Engineering	August 2008
Paddock Substation Complete Detailed Engineering	August 2008
Rockdale Substation Construction Commenced	August 2008
Transmission Line Construction	October 2008
Christiana Substation Construction Commenced	January 2009
Paddock Substation Construction Commenced	June 2009
Christiana Substation In Service	June 2009
Rockdale and Paddock Substations In Service	June 2010
Project In Service	June 2010

2.1.9 Transmission Tariffs

The capital costs incurred for the construction of the proposed transmission line and substation facilities will be recovered in accordance with the provisions of the Open Access Transmission and Energy Markets Tariff of the Midwest ISO and the rules and regulations of the Federal Energy Regulatory Commission.

**Paddock-Rockdale 345 kV Access Project
Technical Support Document**

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

2.2 PROJECT DEVELOPMENT AND ALTERNATIVES CONSIDERED

2.2.1 System and Local Transmission-Level Alternatives (& reasons rejected)

American Transmission Company has evaluated several alternatives to the proposed construction for which authority is sought in this Joint Application. The description, analysis and evaluation of the alternatives considered are provided in Section 8 and Tables 36 and 37 of its *Planning Analysis*.

2.2.2 Route Evaluation Factors

Siting of new transmission lines is a multi-stage process consisting of:

1. Identification of potential route corridors between established end points in accordance with the siting priorities defined in *Wis. Stat.* § 1.12(6). These priorities, consistent with economic and engineering considerations, reliability of the transmission system and protection of the environment include, in order of priority:
 - a. Existing utility corridors.
 - b. Highway and railroad corridors.
 - c. Recreational trails to the extent the facilities may be constructed below ground and do not significantly impact environmentally sensitive areas.
 - d. New corridors.

If the Proposed Route is ordered, the project will be constructed almost entirely within the area of an existing 345 kV electric transmission line ROW (as identified above in item 1a above) and primarily within existing substation properties owned by ATC (Paddock and Rockdale substations). Three exceptions are (1) the Jana Airport (in Segment 2) and (2) the 1.5-mile section of Segment 8 north of Sheepskin Substation, as described in Section 2.4.1.1.5 and (3) Rockdale Substation expansion to accommodate the breaker-and-a-half configuration.

If the Alternate Route is ordered, the project will be constructed on a combination of existing 345 kV, 138 kV and 69 kV transmission line ROW, as well as approximately five miles of new ROW.

Paddock-Rockdale 345 kV Access Project Technical Support Document

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

2.2.3 Route Corridor Alternatives

Major corridors in the proposed project areas in Dane and Rock counties include various transmission lines between the Paddock and Rockdale substations, I-39/90, State Highways 14 and 11, and numerous county highways and town and city roads. In addition to investigating the above, ATC also investigated new cross-country corridors, generally following existing features such as field and section lines, to minimize landowner impacts. In general, cross-country route corridors were chosen for evaluation where they would reasonably intersect with higher priority corridors or to avoid conflicts.

The Proposed Route construction will take place entirely within the area of an existing 345 kV transmission line ROW, with the exception of the Jana Airport (in Segment 2) and the 1.5-mile section of Segment 8 north of Sheepskin Substation, as described in Section 2.4.1.1.5. During construction, the existing X-31 138 kV circuit can be de-energized. The scope of work on the existing W-4 345 kV transmission line will be a combination of energized and de-energized construction based on available outages and optimized energized construction.

The constructability benefits of corridor sharing along the existing W-4 345 kV transmission Proposed Route far exceed those of a new corridor along I-39/90 or pursuing new cross-country routes, which would require significant new ROW acquisition.

The Alternate Route primarily follows existing 138 kV and 69 kV transmission line ROW. During the analysis of potential corridor sharing with existing transmission lines related to this project (X-39, X-12, X-7/X-32, Y-38, Y-151, X-31, Y-61 and W-4), it was determined that outages to these circuits are currently identified to be available and will be required to facilitate the construction, (with the exception of work on W-4, which will be performed under a combination of energized and de-energized conditions).

The Alternate Route would require some re-alignment off the existing transmission line corridors due to constraints such as proximity to structures and/or waterways. (See Segments 20, 18A, 3B, and 3C.)

The Proposed and Alternate routes selected for presentation in this Application utilize existing utility corridors to the fullest extent and minimize landowner and environmental impacts to the greatest extent practicable.

Paddock-Rockdale 345 kV Access Project Technical Support Document

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

2.2.4 Public Outreach

ATC provided a number of opportunities for the public, property owners, community and business leaders, local officials, and the media to learn about the project including: direct mail, personal visits, public information meetings (open houses), telephone calls and Web site information. Outreach communication focused on the scope, economic benefits, and advantages of the Proposed and Alternate routes. A copy of the project fact sheet and map used in conjunction with outreach activities are located in Appendix F, Exhibit 3.

In July 2006, letters were sent to property owners along both routes to inform them of ATC's plans to propose a 345 kV line along an existing utility corridor and to alert them of environmental survey work and unrelated ROW maintenance. A copy of this letter is located in Appendix F, Exhibit 2. Local elected officials were notified in person and by mail of ATC plans and activities. A copy of the letter is located in Appendix F, Exhibit 1.

Between summer 2006 and March 2007, updates to ATC's website were made to reflect schedule changes related to outreach, and a small number of phone inquiries were fielded. Informational open houses were held in the town of Beloit on March 6, 2007, and in the town of Janesville on March 7, 2007. A copy of the invitation letter is in Appendix F, Exhibit 4. Comment sheets were distributed to the attendees at the open houses. Copies of the comments sheets that were returned to ATC are located in Appendix F Exhibit 6. To the extent practicable, ATC has considered these comments in its routing and siting process. A copy of the thank you letters sent to both landowners and interested parties who attended the open houses or who were not in attendance was mailed on March 16, 2007 and are located in Appendix F, Exhibit 5.

ATC also sought input from a wide range of interested persons in developing its methods for evaluating this project. These parties included PSCW and MISO Staff, ATC's major utility customers, other transmission owners, customer groups and environmental organizations. A copy of the *Planning Analysis* was mailed to MISO for comment on March 19, 2007. (A copy of the cover letter that accompanied the report is located in Appendix C, Exhibit 2.). ATC conducted several stakeholder briefings on this project. Copies of ATC's presentations at these briefings, as well as its answers to questions raised at the briefings are posted on ATC's website at "<http://www.atcllc.com>" then select "Documents and Reports", "Access Initiative".

Paddock-Rockdale 345 kV Access Project
Technical Support Document

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

2.3 GENERAL TRANSMISSION LINE SITING INFORMATION

The proposed facilities are located entirely within Rock and Dane Counties. Maps containing the location of the existing transmission line and substations, including topography, aerial photography and Wisconsin Wetland Inventory (WWI) data, as well as plat, zoning, land use and floodplain information for the project area are provided in Appendix A, Figures 1 through 15B.

Digital data files, suitable for importing into a geographic information system (GIS) program are being provided for the Commission staff use under separate cover.

Proposed Route

The Proposed Route follows the route of an existing 345 kV transmission line W-4 along a 150-foot-wide ROW for its entire length. The Proposed Route consists of route segments 16, 14, 9, 8, 2, and 1. The proposed W-10 345 kV transmission line would parallel the existing single-circuit W-4 345 kV transmission line generally through reconstruction of the existing route to accommodate both the existing W-4 345 kV line and the new W-10 345 kV line on new, double-circuit structures with a few exceptions as discussed below.

Segment 16 exits Paddock Substation located on Paddock Road in the town of Beloit and runs west approximately 0.4 miles, and then turns north. Line W-10 will be installed on steel, monopole H-frame structures in this route segment.

Segment 14 runs north cross country to Lowery Road in the town of Rock. It follows the east side of Kessler Road north to the Wisconsin Southern Railroad. The proposed 345 kV transmission line route then runs northeast along the south side of the railroad to the west side of Murray Road. Along this route segment, the existing 345 kV transmission line W-4 is installed on single-circuit H-frame structures, which will be removed and replaced with steel, monopole double-circuit structures. The proposed 345 kV transmission line W-10 will be installed on these structures along with existing line W-4.

Paddock-Rockdale 345 kV Access Project
Technical Support Document

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

Segment 9 then turns north, following the west side of Murray Road. It continues generally north to Highway 11 and the town of Janesville. It then follows on the west side of Willowdale Road for 1 mile, and continues north cross-country. Segment 9 runs diagonally east, and then west, as it crosses the Rock River. Along this route segment, existing line W-4 is installed on single-circuit H-frame structures. As with Segment 14, the existing structures will be removed and replaced with steel, monopole double-circuit structures to support the proposed 345 kV transmission line and existing line W-4.

Segment 8 continues north from the Rock River as a double-circuit transmission line with an unused 69 kV circuit, north cross country into the town of Fulton, following section lines, crossing the Rock River, and ending at Sheepskin Substation. Along this portion of Segment 8, 345 kV line W-10 and a de-energized 69 kV line are presently installed on double-circuit steel lattice structures. These will be replaced with steel, monopole double-circuit structures to support existing line W-4 and the new W-10 345 kV line. The de-energized 69 kV line will be removed.

Here, the existing transmission system becomes double-circuit 69/345 kV. From Sheepskin Substation, the next portion of Segment 8 and runs north 1.5 miles, crossing into the town of Albion, Dane County, where it intersects the Wisconsin and Southern Railroad. Along this portion of Segment 8, the existing transmission system is a double-circuit 69/345 kV line on steel lattice towers. The 69 kV circuit (Y-12, Townline Road-North Monroe) will be removed and replaced with 345 kV circuit W-10. Line Y-12 will be moved onto a new single-circuit, 69 kV monopole structures located adjacent to the steel lattice towers.

After crossing the railroad, the remainder of Segment 8 continues north approximately 0.8 miles. At the railroad crossing, existing 69 kV transmission circuit Y-12 leaves the route, and 345 kV line W-4 continues on single-circuit H-frame structures. These will be replaced with steel, monopole double-circuit structures to support existing line W-4 and the new W-10 345 kV line.

Segment 2 turns east, running cross country, past Jana Airport, and across Interstate Highway 90. The existing 345 kV line W-4 is installed on single-circuit, steel lattice towers except in the vicinity of Jana Airport where W-4 is installed on single-circuit lattice, modified H-frame, low-profile structures. A second set of single-circuit lattice, modified H-frame, low-profile structures will be added adjacent to the existing set for line W-10.

Paddock-Rockdale 345 kV Access Project Technical Support Document

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

Segment 1 continues generally north from Interstate Highway 90 in a triple-circuit 345/345/138 kV configuration, running generally north through the towns of Albion and Christiana. The route terminates ends at Rockdale Substation, located on Koshkonong Road in the town of Christiana.

Double-circuit, steel monopole structures support the existing 345 kV line W-4 and 138 kV line X-31 (Russell-Rockdale). These structures will be replaced with new triple-circuit configuration monopole structures. The existing W-4 and new W-10 345 kV circuits will occupy the upper double-circuit portion of the structures while the existing 138 kV circuit X-31 will be installed as underbuild below the upper double-circuit portion.

Alternate Route

The Alternate Route follows existing transmission line ROW of varying widths and voltages for most of its length. The Alternate Route consists of route segments 15, 17, 13, 20, 11A, 19, 18B, 18A, 5, 3D, 3C, 3B, 3A and 1. Segments 20, 18A, 19B, 3B and 3C comprise approximately 5.3 miles of new ROW required.

Segment 15 exits Paddock Substation in the town of Beloit, turns east and joins the north-south ROW for the existing 138 kV transmission line X-39 (Paddock-Townline Road). It then travels north ¼ mile to the south side of West Beloit Newark Road. The segment then runs east along West Beloit Newark Road for a distance of 1.5 miles. The proposed line route turns north, running along the east side of South Nye School Road to a point north of West Creedy Road. Line X-39 is presently installed on single-circuit, wood monopoles. These will be replaced with double-circuit steel monopole structures to support proposed 345 kV line W-10 and 138 kV line X-39. the proposed 345 kV transmission line Segment 15, would be combined with single-circuit 138 kV transmission line and travel north ¼ mile to the south side of West Beloit Newark Road. The proposed transmission line then runs east along West Beloit Newark Road for a distance of 1.5 miles. The proposed line route turns north, running along the east side of South Nye School Road to West Creedy Road.

Segment 17 continues north along section lines, following line X-39 into through the town of Beloit in Rock County to a point north of Finley Road where X-39 turns to the east and is constructed double-circuit with line X-12. Line X-39 is presently installed on single-circuit, wood monopoles, which will be replaced with double-circuit steel monopole structures to support the proposed 345 kV line W-10 and 138 kV line X-39.

Paddock-Rockdale 345 kV Access Project
Technical Support Document

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

Segment 13 continues north along section lines into the town of Rock, following the ROW for 138 kV line X-12 and crossing Bass Creek. This section begins at the point where 138 kV line X-39 turns to the east and is constructed double-circuit with line X-12. Line X-12 is presently installed on single-circuit H-frame structures. These will be replaced with double-circuit steel monopole structures to support proposed 345 kV line W-10 and 138 kV line X-12.

Segment 20 leaves the transmission line corridor for line X-12 and runs northwest and north for approximately 0.75 mile cross-country, then east approximately 0.75 mile along Eau Claire Road where it meets the ROW for 138 kV double-circuit line X-7/X-32. Segment 20 is new ROW, and proposed 345 kV line W-10 would be installed on steel monopole structures.

Segment 11A follows double-circuit line X-7/X-32, located between Highway D and the Rock River, along the I.C. & E. Railroad (formerly the I & M Rail Link) running generally north, crossing just west of the Highway D/Crosby Avenue intersection in the city of Janesville. The double-circuit, steel lattice structures that support lines X-7/X-32 would be replaced with triple-circuit 345/138/138 steel monopole structures with the two 138 kV circuits underbuilt on the 345 kV structures.

Segment 19B, located in the city of Janesville, begins two spans north of the Highway D/Crosby Avenue intersection. At this point, the segment leaves the ROW for double-circuit line X-7/X-32 and travels northwest on new ROW where it joins with the ROW for 69 kV line Y-38. A single, 345 kV steel monopole will be used to support proposed line W-10.

Segment 19A of the proposed route turns westerly, following existing cross-country, single-circuit, 69 kV transmission line Y-38 to a point where the segment meets with the Wisconsin & Southern Railroad rail line immediately south of Rockport Road in the city of Janesville. The existing 69 kV, single-circuit poles would be replaced with 345/69 kV double-circuit steel monopole structures.

Segment 18B continues north, crossing the Wisconsin and Southern Railroad rail line and Rockport Road from the city of Janesville into the town of Janesville. It then continues north along the ROW for 69 kV line Y-38 to a point south of West Court Street. The existing 69 kV, single-circuit poles would be replaced with 345/69 kV double-circuit steel monopole structures where the 69 kV circuit would be underbuilt on the 345 kV structures.

Paddock-Rockdale 345 kV Access Project Technical Support Document

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

Segment 18A is new ROW. It travels west and then north along Austin Road to a point north of West Mineral Point Road where it turns to again meet the ROW for 69 kV line Y-151. back east to occupy existing ROW. A single, 345 kV steel monopole will be used to support proposed 345 kV line W-10.

Segment 7A of the proposed line continues north, cross country, to the intersection of Highway E and U. S. Highway 14. The route then runs east on the north side of USH 14 for 1.2 miles. The existing 69 kV single-circuit, wood monopole structures would be replaced with double-circuit 345/69 kV monopole structures.

Segment 5 continues north on expanded ROW paralleling the east side of the existing ROW for 138 kV transmission lines X-21 and X-31 and 69 kV transmission line Y-151 all of which terminate at Russell Substation. Single-circuit 345 kV monopole structures would be used to support line W-10.

Segment 3D follows the ROW for 138 kV line X-31 north into the town of Fulton and intersects with the Wisconsin Southern rail line. The existing framed double-circuit, steel lattice 138 kV structures would be replaced by double-circuit 345/138 kV steel monopole structures.

Segment 3C follows the Wisconsin Southern rail line northwest on shared corridor Wisconsin Department of Transportation (WisDOT) ROW for approximately 0.7 mile and also crosses 69 kV line Y-61. The segment then turns north on new ROW, crossing the Rock River and continuing to Dalby Road and existing 69 kV line Y-61. Double-circuit 345/69 kV structures will be installed, and the segment of 69 kV line Y-61 that has been bypassed by Segment 3C will be relocated onto the new structures. This segment of Y-61 will then be removed.

Segment 3B follows Dalby Road east on the former ROW for line Y-61, then turns north and finally east again on new ROW where it rejoins the existing ROW for 138 kV line X31. Single-circuit 345 kV monopole structures will be installed for line W-10.

Segment 3A follows the existing ROW for 138 kV line X-31 north approximately 2.6 miles to the point immediately north of I-39/90 where the segment joins the ROW for existing double-circuit 345/138 kV line W-4/X-31 in the town of Albion in Dane County. The existing double-circuit steel lattice structures will be removed and replaced with double-circuit 345/138 kV monopole structures.

Paddock-Rockdale 345 kV Access Project
Technical Support Document

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

Segment 1 is the same as for the Proposed Route. At I-39/90, the route runs generally becomes a triple-circuit 345/345/138 kV system. It runs north through the towns of Albion and Christiana. The route terminates at Rockdale Substation, located on Koshkonong Road, in the town of Christiana. Double-circuit, steel monopole structures support existing 345 kV line W-4 and 138 kV line X-31 (Russell-Rockdale). These structures will be replaced with new monopole structures with a triple-circuit configuration.

**Paddock-Rockdale 345 kV Access Project
Technical Support Document**

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

2.4 DETAILED ROUTE INFORMATION

The potential impacts resulting from the construction of a new transmission line along the Proposed and Alternate routes are discussed and quantified below.

2.4.1 General Route Impacts

The general impacts of constructing the proposed transmission line along the Proposed and Alternate routes have been quantified and are presented in the Tables 1 to 4 in Appendix A. The results of the impact analysis are presented below.

2.4.1.1 General Route Impacts (Table 1A)

The general route impacts are compiled by Segment in separate tables for the two routes (Appendix A, Table 1A - Proposed Route and Table 1A - Alternate Route). The following information is provided in each table:

2.4.1.1.1 Total Segment length (in feet and miles).

The total lengths for each segment are shown in Table 1A. The total lengths for each route are set out below.

Proposed Route: 183,200 feet (34.7 miles)

Alternate Route: 190,820 feet (36.1 miles)

2.4.1.1.2 Length (ft)

Several segments along both routes either share only a portion of its length with an existing corridor or have multiple ROW requirements. In these cases, the data for those segments are separated out into multiple lengths. This figure corresponds to the length of the segment being considered in each ROW of the spreadsheet. The location and length of areas within segments that have differing ROW requirements are shown in Appendix A, Figure 14. See Appendix A, Table 1A.

2.4.1.1.3 Total width of the ROW required:

The proposed ROW widths for Paddock-Rockdale were determined by considering the following factors: constructability, existing corridor widths, ATC's minimum ROW width requirements, maintainability, and existing land use. The total width of ROW required for both routes are detailed by segment in Appendix A, Table 1A - Proposed Route and Appendix A, Table 1A - Alternate Route. The location and extent of areas within segments that have differing ROW requirements are shown in Appendix A, Figure 14.

Paddock-Rockdale 345 kV Access Project Technical Support Document

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

Proposed Route

The total ROW width required for most of the Proposed Route is 150 feet, which matches the existing ROW width. A small portion (2400 feet in length) of Segment 2 requires 200 feet (Jana Airport area), and the northernmost portion (7400 feet in length north of Sheepskin Substation) of Segment 8 requires 180 feet to accommodate the adjacent 69 kV transmission line. Modifications to existing easements will be sought to accommodate the new 345 kV transmission circuit. Only one existing easement requires no updates.

Alternate Route

The total ROW width required for most of the Alternate Route is 130 feet (where not paralleling road or railroads), with the exception of Segments 11A and 1 which require 150 feet.

Additional ROW will be required in all of these established corridors (except Segment 1) to enhance construction and maintainability of the new 345 kV circuit. The total ROW width required for most of the Alternate Route is 130 feet.

Segment 15 - Existing easement widths are 100 feet where not paralleling a road. These easements must be renegotiated and expanded to a maximum of 130 feet to accommodate the 345 kV transmission line.

Segment 17 - Existing easement widths are 100 feet wide and must be renegotiated and expanded to a maximum of 130 feet to accommodate the 345 kV line.

Segment 13 - Existing easements are 100 feet wide and must be renegotiated and expanded to a maximum of 130 feet to accommodate the 345 kV transmission line.

Segment 20 will require all new 130-foot-wide ROW where not paralleling a road. Where the line is adjacent to road ROW, a 70-foot-wide ROW is required.

Segment 11A - Existing ROW widths are either not specified, specified as "code," or 100 feet wide. Consequently, all easements in Segment 11A must be renegotiated to a maximum of 150 feet to accommodate the 345 kV transmission line. Much of the existing line X-7/X-32 alignment in Segment 11A parallels an existing railroad, allowing some of the 150-foot width to be accommodated for in the railroad ROW.

Paddock-Rockdale 345 kV Access Project

Technical Support Document

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

Segment 19B will require all new 130-foot-wide ROW. Segment 19A existing ROW is either not specified or 80 feet wide. All Segment 19 easements must be renegotiated to a maximum of 130 feet to accommodate the 345 kV line.

Segment 18B - Existing ROW is either not specified or 80 feet wide. All Segment 18B easements must be renegotiated as this ROW will be expanded to a maximum of 130 feet to accommodate the 345 kV line.

Segment 18A will require new 130-foot-wide ROW where not paralleling a road. Where the line is adjacent to a road ROW, a 70-foot-wide ROW is required.

Segment 7A – The existing ROW is 80 to 100 feet wide where it is not parallel to a road. All easements must be renegotiated as this ROW should be expanded to a maximum of 130 feet to accommodate the 345 kV line.

Segment 5 New structures will be located adjacent to the existing structures on expanded existing transmission ROW to minimize impacts to the land. An additional 90 feet of ROW will be required.

Segment 3D - Existing ROW is 100 feet wide and must be renegotiated and expanded to a maximum of 130 feet to accommodate the 345 kV line.

Segment 3C requires a new 130-foot-wide ROW where not paralleling a railroad. Where the line is adjacent to railroad ROW, an additional 80 feet will be required.

Segment 3B requires a new 130-foot-wide ROW where not paralleling a road. Where the line is adjacent to road ROW, an additional 70 feet will be required.

Segment 3A - Existing easements either do not have a specified width or are 80-feet wide. All easements must be renegotiated as this ROW should be expanded to a maximum of 130 feet to accommodate the new 345 kV transmission circuit.

Segment 1 - Existing ROW is 150 feet in width; and no additional ROW will be required. However, easements must be renegotiated to accommodate the new W-10 345 kV transmission circuit for W-10.

The location and extent of areas within segments that have differing ROW requirements are shown in Appendix A, Figure 14.

Paddock-Rockdale 345 kV Access Project Technical Support Document

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

Where 150 feet for ROW is not feasible, minor alignment adjustments (adjust angle structures +/- 10 feet transversely) and span length adjustments will be utilized to reduce the amount of required ROW width.

2.4.1.1.4 ROW Requirement (acres).

Proposed Route: 638.7 acres

Alternate Route: 597.7 acres

2.4.1.1.5 Type of existing ROW, if any, that would be used (shared) by the proposed new ROW.

The Proposed Route is primarily located on existing 345 kV transmission line ROW, with the two exceptions. The first exception is the Jana Airport (Segment 2) where additional ROW will be required to construction the second circuit adjacent to the existing 345 kV transmission line to maintain glide path clearances. The second exception is the 1.5-mile subsection of Segment 8 (north of Sheepskin Substation) where the ROW will need to be expanded to 180 feet wide to accommodate the 69 kV transmission line to run parallel to the double-circuit 345 kV line.

The Alternate Route shares existing 69 kV, 138 kV, and 345 kV transmission lines, roadway, and railroad ROW. In addition, the Alternate Route, will require approximately 5.1 miles of new ROW.

2.4.1.1.6 Shared existing ROW metrics.

The Proposed Route shares existing 345 kV transmission line ROW for its entire length.

The Alternate Route shares existing 69 kV, 138 kV, and 345 kV transmission lines, roadway, and railroad ROW. Most of the segments only share existing transmission line ROW (Segments 17, 13, 19A, 18B, 7A, 5, 3D, 3A, and 1).

Other Alternate Route segments share both transmission line and other ROW corridor. The location and extent of areas within segments that contain multiple corridor shares are identified in Appendix A, Figure 14.

- The southern portion of Segment 15 overlaps transmission and road ROW (16,150 feet).
- Portions of Segment 11A overlap railroad ROW (15,900 feet), while other portions of Segment 11A overlap both road and railroad ROW (1060 feet).
- A part of segment 3B overlaps road and transmission ROW for 1830 feet.

**Paddock-Rockdale 345 kV Access Project
Technical Support Document**

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

The Alternate Route also includes areas that share only road or railroad ROW corridor.

- Portions of Segment 20 (2,560 feet), 18A (3,450 feet), and 3B (3,885 feet) overlap road ROW.
- A portion of segment 3C shares railroad ROW (3,550 feet).

2.4.1.1.6.1 Length (ft) of the existing ROW to be shared.

Proposed Route: 183,200 feet (100%)

Alternate Route: 177,405 feet (93.0%)

2.4.1.1.6.2 Width of the entire existing ROW (in feet).

Proposed Route: The existing transmission ROW is 150 feet.

Alternate Route: The existing ROW is 80 feet along the existing 69 kV transmission line; 100 feet along the existing 138 kV line; and 150 feet along the common 345 kV line (Segment 1), with some exceptions where easement widths are unspecified. Areas that share other ROW corridors have varying existing ROW. Roadway and rail corridors are generally between 50 and 70 feet wide.

2.4.1.1.6.3 Width (ft) of the existing ROW that would be shared.

Proposed Route: The entire 150-foot width of the existing transmission ROW would be shared. The line would be constructed on the existing centerline.

Alternate Route: The existing ROW that would be shared varies. Generally, the line would share the entire ROW on segments that contain existing transmission line ROW. Where routes share both transmission line and other corridors, the shared ROW widths vary. The existing ROW shared along only road or rail corridor is between 50 and 60 feet.

2.4.1.1.6.4 Area (acres) of the existing ROW that would be shared.

Proposed Route: 630.6 acres

Alternate Route: 439.3 acres

Paddock-Rockdale 345 kV Access Project
Technical Support Document

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

2.4.1.1.7 New (additional) ROW required.

The Proposed Route would require additional ROW at the two locations described in more detail in Section 2.4.1.1.7.1 below.

The Alternate Route would require additional ROW. For segments that share transmission corridor, the line would be constructed on the existing centerline. Further explanation of ROW requirements is described in Section 2.4.1.1.7.1 below.

2.4.1.1.7.1 Width (in feet)

Proposed Route: The Proposed Route would require new ROW at two locations.

- An additional 50 feet of ROW to the south of the existing ROW would be required on a portion of Segment 2 because of height restrictions of the Jana Airport (2,400 feet length).
- An additional 30 feet of ROW to the east of the existing ROW would be required for a 7,400 feet portion of Segment 8 because of the relocation of the existing 69 kV line. The proposed 345 kV transmission line would be constructed on the existing centerline, with the 69 kV transmission line running parallel.

Alternate Route: The Alternate Route requires new ROW along most segments.

- Segments 17, 13, 3D, and 3A share existing 138 kV line transmission ROW and require additional new ROW to achieve a 130-foot width.
- Segments 19A, 18B, and 7A share existing 69 kV transmission line ROW, and requires 50 feet of new ROW.
- Segment 5 requires an additional 90 feet of new ROW.

Other Alternate Route segments share both transmission line and other ROW corridor.

- A part of Segment 15 requires an additional 15 feet where located along transmission and road ROW.
- The portions of Segment 11A that overlap railroad ROW require 25 feet.
- The part of Segment 3B that is located along the Y-61 line and road ROW requires an additional 45 feet of ROW.

Paddock-Rockdale 345 kV Access Project Technical Support Document

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

New ROW requirements vary along areas that share only road or railroad corridor.

- Areas located along only road corridor (parts of Segments 20, 18A, and 3B) require an additional 70 feet of ROW.
- A portion of Segment 3C shares only railroad ROW and requires an additional 80 feet.

All of Segment 19B and parts of Segments 20, 18A, 3C and 3B do not share existing ROW. These areas require 130 feet of new ROW.

New ROW is not required along a small portion of segment 11A that is located between road and railroad corridor. Additionally, the common Segment 1 does not require new ROW.

2.4.1.1.7.2 Area (acres)

Proposed Route: 7.9 acres

Alternate Route: 158.4 acres

2.4.1.1.8 Corridor Sharing

The Proposed Route overlaps existing 345 kV transmission line W-4 ROW on all segments.

The Alternate Route overlaps existing corridors. The route shares 138 kV line transmission ROW on segments 15, 17, 13, 11A, 5, 3D, and 3A; 69 kV transmission line ROW on Segments 19A, 18B, 7A, and 5; and 345 kV transmission line on the common Segment 1. The route is also located along railroad and roadway corridors along parts of Segments 15, 20, 11A, 18A, 7A, 3C, and 3B.

The following values were calculated for each segment and are outlined in Appendix A, Table 1A.

2.4.1.1.8.1 Percent new ROW length shared

2.4.1.1.8.2 New ROW width shared

2.4.1.1.8.3 Percent existing ROW width shared

2.4.1.1.8.4 Percent new project ROW width shared

2.4.1.2 Railroad and pipeline corridors

The Alternate Route overlaps the Wisconsin Southern and the I.C. & E. Railroad ROW along segments 3C and 11A, respectively, which are actively used by Wisconsin Southern. The railroad corridors are active. Neither route shares ROW with pipeline corridor.

Paddock-Rockdale 345 kV Access Project Technical Support Document

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

2.4.1.3 Interstate or State Highways

The Proposed and Alternate routes do not share interstate or state highway ROW.

2.4.1.4 Buildings

The number of buildings at various distances from the Proposed Route and Alternate Route centerlines was quantified using GIS then field verified with a laser range finder to the extent possible from ATC's existing ROW. The distances were confirmed by using the GIS Snap Map³ program. The results of the building survey are summarized in two tables for each route (Appendix A, Table 1A-Proposed Route and Table 1B-Alternate Route) and are set forward below. Some buildings will be within proposed ROW widths; ATC will meet all applicable National Electric Safety Code (NESC) clearances to buildings.

2.4.1.4.1 Number and Type of Buildings (Table 1B)

The number and type of each building within the following distance categories – as estimated from the centerline: 0-25 feet, 26-50 feet, 51-100 feet, 101-150 feet, and 151-300 feet. Brief descriptions of the results are also provided below

2.4.1.4.1.1 Homes

On the Proposed Route, 46 single-family residences are found within 300 feet of the centerline. Most of the residences are clustered near subdivisions on Segment 8 (20) and Segment 9 (15). The other residences are widely scattered throughout the route. No residences are located within 50 feet from the centerline. Six residences are located between 51 and 100 feet, and 15 are located between 101 and 150 feet from the centerline.

³ RSK Orbital Snap Map 2003 is a unique data viewer that couples standard GIS base map layers (planimetric features, cadastral data, DRGs, orthophotography) with high resolution forward-facing oblique photos collected via helicopter. The result is a product that provides the end user with simultaneous, synchronized oblique and orthogonal views enhanced with GIS thematic layers. This technology has proven to be invaluable to ATC project teams for use on existing and proposed transmission line corridor review and evaluation.

Paddock-Rockdale 345 kV Access Project Technical Support Document

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

The Alternate Route has 174 single-family residences located within 300 feet of the centerline. In total, the Alternate Route has two residences located between 26 and 50 feet, 19 residences between 50 and 100 feet, and 56 residences between 101 and 150 feet of the centerline.

Segment 11A has 31 homes widely distributed along CTH D, with one residence located between 25 and 50 feet of the centerline. Most other residences are clustered near subdivisions. There are 44 residences located adjacent to Segment 15 on S. Nye School Road and within subdivisions along W. Beloit Newark Rd, most of which are located between 101 and 150 feet of the centerline. On Segment 3B, one residence is located between 26 and 50 feet of the proposed centerline.

2.4.1.4.1.2 Apartments

The Proposed Route has one duplex located between 51 and 100 feet of the centerline on Segment 2.

The Alternate Route has a total of seven duplexes located along the route. Most of the apartments are located along segment 18A, where three duplexes are located between 51 and 100 feet and two are between 101 and 150 feet. Additionally, one apartment building is located between 26 and 50 feet of the centerline along segment 18B.

2.4.1.4.1.3 Schools

No schools were field observed within 300 feet of the centerline of any segment along either the Proposed Route or Alternate Route.

2.4.1.4.1.4 Daycare Centers

Information regarding the location of registered day care providers was obtained from the Wisconsin Department of Workforce Development and from the Child Care Resource and Referral of South Central WI, Inc.

Based on the review of this information, in conjunction with field observations, no daycare facilities or providers are located within 300 feet of the Proposed Route.

One residence along the Alternate Route is registered as a child care provider. This residence is located about 220 feet from the proposed centerline on Segment 5 of the Alternate Route.

**Paddock-Rockdale 345 kV Access Project
Technical Support Document**

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

2.4.1.4.1.5 Hospitals

No hospitals were observed within 300 feet of the centerline of the Proposed Route.

The Alternate Route has one urgent care facility located about 230 feet from the centerline of Segment 3A. The Affiliated Physicians facility is located at 92 East STH 59, east of Edgerton. However, this facility was vacant as of March 2007.

2.4.1.4.1.6 Commercial/Industrial

Appendix A, Table 1B identifies buildings within 100 feet of the centerline for both the Proposed and Alternate routes. The Proposed Route has 9 commercial/industrial buildings located within 100 feet. The Alternate Route has 4 commercial/industrial buildings located within 100 feet.

2.4.2 Detailed Route Impacts by Existing Land Cover

The following summarizes the land cover identified by ATC in its survey of the Proposed and Alternative routes. The entire Proposed Route consists of cleared transmission line corridor that has been maintained in accordance with the Wisconsin State Electrical Code.

The land cover along both routes was identified using aerial photography and field observations. Two sources of photography were used including the National Agriculture Imagery Program (NAIP) aeriels from 2005 and photography from flights along the routes taken in early 2006. Data from these sources were verified through field observations when fieldwork was conducted in June through August 2006 for areas along existing ATC ROW. Fieldwork on existing ROW included wetland delineations and direct land cover observations. Areas that do not contain existing transmission ROW were field checked to the extent possible from road or other public ROWs during March 2007. The extent of existing land cover along both the Proposed and Alternate routes was measured by using Arc Map and Snap Map GIS programs.

Appendix A, Table 2 shows length and area values by route segment of the necessary easement widths required to construct the proposed transmission line along the Proposed and Alternate routes, respectively. Portions of Segments 15, 20, 11A, 18A, 7A, 3B, and 3C are located along cleared road ROW, road pavement or railroad ballast. Land cover impacts were not calculated for the portion of the proposed ROW that overlaps cleared road or railroad ROW.

Paddock-Rockdale 345 kV Access Project Technical Support Document

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

The land cover present on the routes and identified in Table 2 includes agricultural lands (Section 2.4.2.1.7.1), non-agricultural lands (Section 2.4.2.1.7.2), and developed lands (Section 2.4.2.1.7.3) as described in more detail below. Agricultural land cover includes active fields, pastures, and recently fallow fields (old field). Fields or other areas with no evidence of recent tillage or agricultural production were not included as agricultural land. A detailed discussion of these lands is included in Section 2.4.5.

The non-agricultural lands include upland grasslands, upland forest, and wetlands. Most of the grasslands identified along the routes consist of grassed swales or open fields not in agricultural production. Generally these fields were dominated by smooth brome grass (*Bromus inermis*), goldenrod species (*Solidago spp.*), and Queen-Ann's lace (*Daucus carota*). In some cases, these lands contained scattered or limited shrub growth including some elderberry (*Sambucus canadensis*), dogwoods (*Cornus spp.*), and honeysuckle (*Lonicera spp.*). Approximately 5% of the Proposed Route and 6% of the Alternate Route crosses upland grasslands.

The upland forests identified along the routes include areas that had been cleared for existing ROW and adjacent forested lands. Approximately 8% of the Proposed Route crosses upland forest, all of which is comprised of cleared and maintained transmission line ROW. Approximately 16% of the Alternate Route crosses upland forest, of which about 34% consists of existing ROW. Further discussion of the forested lands is included in Section 2.4.6.

The wetlands identified along the routes include forested and non-forested wetland types. Approximately 11% of the Proposed Route crosses wetland. About 94% of the wetlands on the Proposed Route are located within existing cleared transmission line ROW. Wetlands also exist along Segments 2 and 8 where additional ROW is required. The Alternate Route crosses wetland along 8% of the route, about 65% of which is located within existing cleared transmission line ROW. The wetlands are described further in Section 2.4.13.

The developed lands located along both routes include residential, commercial/industrial, and other lands. The residential lands are mostly comprised of subdivisions and scattered residences. For homes located within subdivisions, the amount of residential land generally totaled the length of the lots across the route. For other homes, the residential length was characterized by lawns associated with these residences. Approximately 1% of the Proposed Route and 2% of the Alternate Route are located within residential lands.

**Paddock-Rockdale 345 kV Access Project
Technical Support Document**

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

The commercial/industrial lands identified along both routes are widely distributed along the corridor. These lands are comprised of individual businesses and adjacent grounds. About 1% of both routes cross commercial/industrial lands.

Other developed lands include areas that are not classified within the residential or commercial/industrial categories. These lands include developed lands within or on substation grounds, a cemetery located along Segment 1, or other areas as identified in Appendix A, Table 2. Further discussion of the developed lands is outlined in Section 2.4.2.1.7.3.

2.4.2.1 Table 2

The detailed land use information is compiled by segment in separate tables for the two routes (Appendix A, Table 2 - Proposed Route and Table 2 - Alternate Route). The following information is provided in each table:

2.4.2.1.1 Existing/New ROW width required in feet

2.4.2.1.2 Existing ROW width (ft) used

2.4.2.1.3 New ROW width (ft) (excluding road ROW).

2.4.2.1.4 Total Segment length (ft)

2.4.2.1.5 Length (ft)

2.4.2.1.6 Segment length shared with an existing corridor

2.4.2.1.7 Report the length of a Segment that affects the following land cover types:

2.4.2.1.7.1 Agricultural

A detailed discussion of agriculture along the Proposed and Alternate routes is included in Section 2.4.5.

2.4.2.1.7.1.1 Crop land (row crops, hay)

The routes cross mostly lands under corn, soybean, or forage (alfalfa) production.

2.4.2.1.7.1.2 Pasture

Most of the pasture lands appear to be used for dairy production.

**Paddock-Rockdale 345 kV Access Project
Technical Support Document**

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

2.4.2.1.7.1.3 Old Field

The areas designated as old field are comprised of recently fallow lands that are currently not under agricultural production.

2.4.2.1.7.1.4 Specialty

Neither route crosses any areas that are under specialty crop production (i.e., Ginseng, Tree Farm, Orchards, Cranberry bog, etc.).

2.4.2.1.7.2 Non-Agricultural

2.4.2.1.7.2.1 Upland

2.4.2.1.7.2.1.1 Prairie/Grassland

The Prairie/Grassland areas identified along the routes do not include converted forest on existing ROW or cleared road ROW. These areas are primarily comprised of grassed swales or other areas dominated by herbaceous vegetation. The Proposed Route crosses 30.7 acres of grassland. The Alternate Route crosses a total of 39.5 acres (25.8 acres existing ROW and 13.7 acres new ROW).

2.4.2.1.7.2.1.2 Upland Forest ⁴

The upland forest areas identified along the routes include converted forest on existing ROW. A detailed discussion of forested lands is included in Section 2.4.6.

2.4.2.1.7.2.2 Wetland ⁵

A detailed discussion of wetlands and methods used to identify wetlands is included in Section 2.4.13.

2.4.2.1.7.2.2.1 Forested Wetland

Wetlands located in existing ROW through previously forested wetland are included in this category.

⁴ Forested lands were defined as areas dominated by trees (> 20% canopy cover) within 75 feet of the ROW centerlines and running at least 75 feet along the ROW. Narrow tree lines or windbreaks were not included in this category.

⁵ Wetland delineations were completed in the field using the methods outlined in the USACE 1987 Manual and/or remotely identified using aerial photography and other available data sources.

**Paddock-Rockdale 345 kV Access Project
Technical Support Document**

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

2.4.2.1.7.2.2 Non-forested Wetland

All other non-forested wetlands (i.e. wet meadow, shrub-carr, and shallow marsh) are included in this category.

2.4.2.1.7.3 Developed Land

2.4.2.1.7.3.1 Residential

The Proposed Route crosses 9.1 acres of residential lands all on existing ROW. The Alternate Route crosses a total of 13.9 acres (9.3 acres existing ROW and 4.6 acres new ROW).

2.4.2.1.7.3.2 Commercial/Industrial

The Proposed Route crosses 5.8 acres of commercial/industrial lands all on existing ROW. The Alternate Route crosses 6.0 acres (3.9 acres existing ROW and 2.1 acres new ROW).

2.4.2.1.7.3.3 Other

Other developed lands that are not residential or commercial/industrial are included in this category. These lands include areas within the substations or on the adjacent grounds. Two golf courses are also included in this category. In addition, Segment 1 runs along a cemetery for 380 feet. The cemetery extends approximately 30 feet into the existing ROW. Additional ROW width is not required on Segment 1; thus, impacts to the cemetery are not anticipated.

2.4.3 Impacts by Land Ownership – Public and Tribal lands

The estimated potential impacts for the proposed project to public lands are provided in Table 3.

2.4.3.1 TABLE 3

The estimated potential impacts to public lands are compiled by Segment in separate tables for the two routes (Appendix A, Table 3A - Proposed Route and Appendix A, Table 3B - Alternate Route). The segment lengths and ROW information contained within this table was generally taken from the General Route Impacts (Section 2.4.1.1). The following information is provided in each table:

2.4.3.1.1 Existing ROW width (ft) shared (if any)

2.4.3.1.2 New ROW width (ft) required

2.4.3.1.3 Total Segment Length (ft) (same value as 2.4.2.1.4)

2.4.3.1.4 Length (ft) (same value as 2.4.2.1.5)

**Paddock-Rockdale 345 kV Access Project
Technical Support Document**

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

2.4.3.1.5 Length (ft) of proposed line passing through the following ownership types:

2.4.3.1.5.1 Federal Land (identify by type)

The Proposed and Alternate routes do not cross any federally-owned lands.

2.4.3.1.5.2 State Properties

The Proposed and Alternate routes do not cross any state-owned lands.

2.4.3.1.5.3 County-owned land

The Proposed and Alternate routes do not cross any county-owned lands.

2.4.3.1.5.4 Village, City or Town

The Proposed Route does not cross any municipally-owned lands. The Alternate Route crosses lands owned by the town of Janesville and the city of Janesville. The following types of properties include:

2.4.3.1.5.4.1 Park

Segment 7A of the Alternate Route crosses a town of Janesville boat launch at the Rock River along USH 14 approximately 220 feet.

Segments 19A and 19B cross the city of Janesville Rockport Park and pool grounds a distance of approximately 4,180 feet, resulting in about 6 acres of new ROW impact.

Segment 11A crosses the city of Janesville bike trailhead and lands adjacent to Rockport Park a total of 1,250 feet. New ROW impact is about 1.5 acres.

2.4.3.1.5.4.2 City Forest (Arboretum)

Segment 7A is located along the eastern property boundary of the City of Janesville Cook Arboretum. The segment crosses the arboretum a distance of 5,300 feet with an existing 40 feet wide ROW. The Alternate Route requires 25 feet of new ROW in this area, resulting in about 3 acres of new ROW impact.

2.4.3.1.5.4.3 School

None.

**Paddock-Rockdale 345 kV Access Project
Technical Support Document**

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

2.4.4 TABLE 4 – Summary Table

The Proposed and Alternate routes are approximately the same length.

A summary of the Proposed and Alternate routes are outlined in Appendix A, Table 4. The following information is provided in Sections 2.4.4.1 through 2.4.4.7 and in Tables 1 and 2.

2.4.4.1 Total route length (ft) (from Table 1A)

2.4.4.2 Route length (miles) (standard AFR Table 4 will calculate this value)

2.4.4.3 Agricultural impact (acres) – existing and new ROW combined (from Table 2)

2.4.4.4 Non-agricultural upland impact – existing and new ROW combined (see Section 2.4.2.1.7.2.1.1 – and Table 2)

2.4.4.5 Upland forest (acres)

2.4.4.5.1 Existing ROW (from Table 2)

2.4.4.5.2 New ROW (from Table 2)

2.4.4.6 Wetland (acres) (from Table 2)

2.4.4.6.1 Forested wetland (acres)

2.4.4.6.1.1 Existing ROW

2.4.4.6.1.2 New ROW

2.4.4.6.2 Non-forested Wetlands – existing and new ROW combined (from Table 2)

2.4.4.7 Distance to Residences and Apartments (from Table 1B)

2.4.5 Agricultural Land

Agricultural land uses were identified using aerial photography and field observations. Two sources of photography were used including the National Agriculture Imagery Program (NAIP) aerials from 2005 and photography from flights along the routes taken in early 2006. Data from these sources were verified through field observations. Fieldwork was conducted in June through August 2006 for areas along existing ATC ROW. Areas that do not contain existing transmission ROW were field checked to the extent possible from road or other public ROW during March 2007.

Property classified as being in agricultural use includes active fields, pastures, recently fallow fields (old field), and orchards. Fields or other areas with no evidence of recent tillage or agricultural production were not included as agricultural land.

Paddock-Rockdale 345 kV Access Project Technical Support Document

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

The amount of agricultural acreage along both the Proposed and Alternate Routes was measured by using GIS programs Arc Map and Snap Map. The measurements were compiled and summarized in Appendix A, Table 2 - Proposed Route and Table 2 - Alternate Route.

Both the Proposed Route and Alternate Route would run across land that is presently dominated by agricultural use for crops, pasture, and old field. Approximately 71% of the Proposed Route acreage and 54% of the Alternate Route acreage crosses agricultural land. Additional discussion is presented below.

2.4.5.1 Type of Farming

The primary farming practice along both routes is row crops, generally corn and soybeans. To a lesser extent, but also included in the crop category were fields under forage or hay production. Lands used for pasture and fallow fields were also observed along the routes. Because the majority of each route is along shared ROW and farming will be allowed as part of the easement, impacts to existing cropping practices and pastures should be minimal.

Other specialty crops such as ginseng, tree farms, or cranberry bogs were not encountered on either the Proposed or Alternate Routes.

2.4.5.2 Practices Potentially Affected

Potential agricultural impacts of the proposed project will be short term and include temporary construction-related impacts, such as loss of crops, and potential loss of acreage due to structure placement. ATC will minimize these potential impacts by restoring agricultural lands to the extent practicable and also by providing compensation to producers where necessary.

Many of the route segments in agricultural areas run along fence lines or between fields. Some of the route segments run along public road ROW, and the proposed structures would be located along the edge of the ROW and the farm field, where practicable. These route siting practices should minimize the loss of tillable land and any problems associated with use of agricultural equipment. If these conflicts occur, ATC will work with property owners during the real estate acquisition to accommodate property owner needs to the greatest extent practicable.

Paddock-Rockdale 345 kV Access Project Technical Support Document

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

No clear evidence of drain tile along either the Proposed or Alternate Route is apparent from aerial photography, nor was evidence of tile lines observed during the field investigation. However, there are areas of farmland adjacent that contain hydric soils and are in proximity to ditches, suggesting that tiles may exist in these locations. If tiles do exist along the selected route, breakage from construction vehicles travel may occur. If this occurs, ATC will restore the tiles to pre-construction conditions.

One field immediately north of USH 14 on Segment 9 of the Proposed Route has center pivot irrigation adjacent to the transmission line. Placement of the proposed line would be along the existing centerline; therefore, interference with the irrigation system is not expected.

2.4.5.3 Farmland Preservation Program Parcels

Parcels enrolled in the Farmland Preservation Program (FPP) were identified on the Proposed and Alternate routes. These parcels were identified from information provided by the Dane County and Rock County Land Conservation departments. These parcels are identified on the property ownership maps located in Appendix E, Figure 9.

Electrical transmission lines are permitted on lands enrolled in the Farmland Preservation program and are considered to be compatible with agricultural use. ATC will work with landowners to reduce impacts where practicable.

2.4.5.4 Proximity to Farm Buildings

Farm buildings located within 100 feet of the centerline are identified for each route, by route segment. ATC will work with potentially impacted landowners with farm buildings to mitigate any induced voltage concerns. The following information is included in the Farm Buildings Table located in Appendix E, Table 1:

2.4.5.4.1 Buildings Used to House Animals

The Proposed Route has one animal building within approximately 80 feet of the proposed centerline. The Alternate Route has four animal buildings located between 75 and 95 feet from the centerline, although one of these appears to be currently vacant.

Paddock-Rockdale 345 kV Access Project Technical Support Document

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

2.4.5.4.2 Metal Sheds or Equipment Storage Buildings

The Proposed Route has three equipment storage buildings located between 20 and 80 feet of the centerline. The Alternate Route has one equipment storage building located approximately 75 feet from the centerline.

2.4.5.4.3 Farm Building Locations (GIS Shapefile).

Farm buildings located within 100 feet of the centerlines are provided as a GIS shapefile. The shapefile includes an attribute table that identifies the type of building, segment location, and distance (as measured) from the route centerline. Additionally this information is included in Appendix E, Table 1.

2.4.6 Forest Land

Forested lands were identified using aerial photography and field observations. Two sources of photography were used including the National Agriculture Imagery Program (NAIP) aeriels from 2005 and photography from flights along the routes taken in early 2006. Data from these sources were verified through field observations. Fieldwork was conducted in June through August 2006 for areas along existing ATC ROW. Areas that do not contain existing transmission line ROW were field checked to the extent possible from road or other public ROW during March 2007.

Forested lands were defined as areas dominated by trees (>20% canopy cover) within 75 feet of the ROW centerlines and running at least 75 feet along the ROW.⁶ Forested lands on existing ROW (converted forest) are included within this category. Narrow tree lines or windbreaks were generally not quantified as forested cover. Upland forest lands on existing ROW and new ROW for both routes are included in Appendix A, Table 4.

The Proposed Route includes 55.5 acres of converted upland forest (approximately 9% of the total route acreage). These forested areas are on existing ROW where the entire width has been previously cleared. Additional clearing of upland forest would not be necessary on the Proposed Route except in the area of the Jana Airport. A discussion regarding forested wetlands is included in the wetlands Section 2.4.13 (Wetlands).

⁶ The 75-foot figure is a more conservative figure than the 5-acre minimum size defined in the US Forest Service Silvicultural Handbook (FSH 2409.26d), and the canopy coverage is based on the EPA, NRCS, and USDA guidelines for defining land cover (http://www.epa.gov/mrlc/Implmnt_plan.htm#Def).

Paddock-Rockdale 345 kV Access Project Technical Support Document

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

The Alternate Route includes a total of 98.4 acres of upland forest (approximately 16% of the total route acreage). Of this total, 59.2 acres are on existing ROW and 39.2 acres are on new ROW. Most of the forested lands within existing ROW are located on previously cleared corridor and would be considered converted forest. However, there are a few locations where upland forest extends into road or railroad ROW. Although these areas are included within the existing ROW category, they would not be considered converted forest. The uplands located within road ROW account for approximately 2 acres. The Alternate Route would require tree removal on an estimated 41 acres where forested lands extend into the ROW corridor.

The forested areas adjacent to the Proposed and Alternate routes are primarily comprised of somewhat degraded Southern Dry Forest and Southern Dry-Mesic Forest. These forested lands are mostly privately owned and are generally between 11 and 24 inches diameter breast height (dbh). The dominant species commonly observed within these woodlands include red oak (*Quercus rubra*), black oak (*Quercus velutina*), shagbark hickory (*Carya ovata*), black cherry (*Prunus serotina*), black walnut (*Juglans nigra*), and box elder (*Acer negundo*). The under story vegetation was mostly comprised of dense hazelnut (*Corylus spp.*), honeysuckle (*Lonicera spp.*), and buckthorn (*Rhamnus spp.*) with sparse herbaceous vegetation. A summary of forested lands along the routes is included in Appendix E, Tables 3A and 3B.

2.4.7 Conservation Easements

Information regarding lands with federal conservation easement agreements, such as the Wetland Reserve Program (WRP) and the Grassland Reserve Program (GRP) was received from the Natural Resources Conservation Service (NRCS) on March 19, 2007.

Several parcels with WRP agreements are located along the existing 345 kV line on Segment 14 of the Proposed Route. The existing transmission line predates the WRP agreements. The Proposed Route crosses easements for about 3,850 feet (13.3 acres), as shown on the property ownership maps (Appendix A, Figure 9). According to information provided by the NRCS, there are no GRP easement agreements along the route segments for this project.

**Paddock-Rockdale 345 kV Access Project
Technical Support Document**

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

2.4.8 Endangered, Threatened, or Special Concern Species, and Natural Communities

Information concerning the presence of rare species (threatened, endangered, or special concern) within two miles of the Proposed and Alternate routes was obtained through a review of the Wisconsin Natural Heritage Inventory (WNHI) database. The WNHI database notes the presence of twenty-one non-historic occurrences of threatened, endangered, or special concern species, and twenty-four occurrences of natural communities within two miles of the Proposed and Alternate routes. Subsequent to review of the existing WNHI data, ATC, with its consultant, Natural Resources Consulting, Inc. (NRC), completed field surveys and habitat characterization within and adjacent to the Proposed and Alternate routes. The Rock and Dane County threatened and endangered species lists were then reviewed and thirteen additional threatened or endangered species were added to the list of species evaluated for this project based on the habitat characterization work that was described above. In addition, the habitat characterization work was used to evaluate the likelihood that the WNHI-listed species would be found within or in close-proximity to the Proposed or Alternate Route.

One of the non-historic WNHI records for Threatened, Endangered, or Special Concern species is identified to the township level and overlaps both the Proposed and Alternate routes. Two other records overlap or are adjacent to the Alternate Route.

None of the species were observed along either route during the field investigation. However, all thirty-four of the species were deemed to have at least marginal habitat along one or both of the route corridors.

Paddock-Rockdale 345 kV Access Project
Technical Support Document

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNr Utility Permit Part 2

Since the Proposed and Alternate routes tend to run through agricultural land and follow road edges, which are subject to frequent disturbance, observed habitat quality was generally poor. Consequently, the risk of direct impact to any of the species identified within two miles of the proposed project or substantial indirect impact to their suitable habitat from construction of the proposed transmission line appears minimal. The risk is minimal because most of the route corridors have already been developed and do not contain suitable habitat. Once a route has been selected, if necessary, ATC may survey the areas with potentially suitable habitat and implement avoidance measures if a species is subsequently identified. ATC's standard construction techniques and construction timing should result in minimal ground disturbance, and the change to existing habitat conditions from the resulting poles and wires would be negligible. If for some reason avoidance measures cannot be implemented, ATC will provide supplemental information required for the issuance of an Incidental Take Authorization (ITA).

A report describing the methods and results of the Threatened, Endangered, and Special Concern species investigation was submitted to the WDNr Office of Energy for review and comment and to the Commission concurrent with its submittal to the WDNr. A copy of the cover letter submitted with the rare species report is located in Appendix G, Exhibit 4. The redacted version of the TES report is located in Appendix G, Exhibit 5.

No designated State Natural Areas are located in the vicinity of either the Proposed or Alternate Route corridors.

2.4.9 Archaeological and Historic Resources

Great Lakes Archaeological Research Center, on ATC's behalf, has conducted an archival and literature review of the project area, included in Appendix E, Exhibit 1. This report identified eight archaeological sites or burial sites potentially within or immediately adjacent to the Proposed Route. The Alternate Route has 13 archaeological or burial sites and one historic property potentially within or immediately adjacent to the route. Three of the aforementioned archaeological sites are located within or near the ROW in Segment 1, which is shared by both the Proposed and Alternate routes. One of these sites is a Euro-American cemetery that extends approximately 30 feet into the existing ROW for a distance of 380 feet. ATC is proposing to conduct construction in such a manner that the cemetery will not be negatively impacted. Upon final line design, further archaeological review will be undertaken to ensure that all identified sites found to be within the ROW are properly protected.

Paddock-Rockdale 345 kV Access Project Technical Support Document

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

2.4.10 Nearby Airports

The Proposed Route passes just south of Jana Airport, a privately-owned airstrip located in Section 27, town of Albion, Dane County. The present 345 kV circuit is on modified H-frame structures south of the north/south runway. Existing conductors are marked with multi-colored balls, while some existing poles are painted red and white. The new circuit will be built south of and parallel to the existing line and thus further from the runway. Replacement structures will not exceed the height of existing structures, so as not to impede the continued use of the airport runways.

The Alternate Route passes to the west of Southern Wisconsin Regional Airport. This facility is a publicly owned, public use airfield located between Janesville and Beloit. The airfield is used by commercial and general aviation air traffic. Transmission structure design is taking height limitation zoning into account along Segment 11A and with the proposed structure in ER-10-000080-048, and Segment 18A (proposed structure ER-10-000080-045). All height limitation restrictions will be met. See Appendix A, Figure 13, for a map showing the height restrictions. A map depicting the Height Limitation Zoning (HLZO) for the Rock County Southern Wisconsin Regional Airport is located in Appendix A, Figure 17.

The Alternate Route also passes near two private airstrips. Seales Landing Airport is located in Section 34, town of Janesville, Rock County. Myers Farm Airport is in Section 16, town of Beloit, Rock County. Both of these operate in proximity to existing 138 kV transmission lines. The new facility will pose no new impact to navigation.

Airfield ownership and other information as listed by the Federal Aviation Administration (FAA) and WisDOT Bureau of Aeronautics are provided below:

**Paddock-Rockdale 345 kV Access Project
Technical Support Document**

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

Airport Name	Location Section Number Township/Range	Owner Name And Address
	Latitude Longitude	
Southern Wisconsin Regional Airport	Section 23 T2N R12E	Rock County 51 S Main St Janesville WI 53545
	42° 37' 12.913" N 89° 02' 29.645" W	
Jana Airport	Section 28 T5N R12E	%Badger Diversifies Met Leroy Klecker 703 Ruskin St. Madison, WI 53704
	42° 52' 22.016" N 89° 04' 32.405" W	
Seales Landing Airport	Section 34 T4N R12E	Robert Seales 625 St. Johns Ave. Milton, WI 53563
	42-45-55N 89-03-20W	
Myers Farm Airport	Section 16 T1N R12E	James Myers 8608 E Rye Dr. Clinton, WI 53525
	42-30-40.04N 89-05-01.4W	

Permits from the FAA or the Bureau of Aeronautics are not expected to be needed for the construction of the proposed line. Any required notifications to the agencies will be made. A complete listing of all airports within a 5-mile radius of the Proposed and Alternate routes is located in Appendix A, Table 5.

2.4.11 Access Issues

Most segments of the Proposed and Alternate routes run along public roads and/or transmission lines. Portions of Segments 20, 18A, 3C and 3B of the Alternate Route are located on private properties and do not contain existing ROW. For all segments, ATC is proposing to directly access the ROW from public roads unless ATC is able to arrange for alternative access that minimizes environmental impacts. A preliminary access plan for each of the two routes is presented in Appendix A, Figures 15A and 15B.

Paddock-Rockdale 345 kV Access Project
Technical Support Document

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

Both routes cross waterways and wetland areas. On the Proposed Route, 26 waterways are located within or adjacent to the ROW. All of the waterways are currently crossed by the existing transmission line. Of these waterways, a total of 9 will require a temporary crossing for equipment access purposes. The other 17 waterways will not require a temporary crossing. Potential impacts to these streams will be minimized by using appropriate erosion control measures and by prohibiting vehicular access.

The Alternate Route has 17 waterways located within or adjacent to the proposed ROW. All of the waterways are currently crossed by existing transmission lines. At three of these crossings, waterways will be traversed at a different location. These areas include the Rock River (40-S1), Bass Creek (58-S1), and an unnamed tributary (53-S1).

Of the waterways crossed by the Alternate Route, a total of 6 will require a temporary crossing for equipment access purposes. The other 11 waterways will not require a temporary crossing. Potential impacts to these streams will be minimized by using appropriate erosion control measures and by prohibiting vehicular access.

The area adjacent to the Saunders Creek (10-S1) on Segment 2 of the Proposed Route is comprised of a large wetland complex with several lateral waterways that cross the corridor. Three temporary crossings of the waterways are proposed in this area. In addition, construction activities are anticipated to take place during the winter when frozen conditions are expected to minimize impacts to the area. If this is not possible, alternate access and/or construction matting may be utilized.

Both the Proposed and Alternate routes cross the Rock River two times. Crossings of this waterway using a temporary clear span bridge (TCSB) are not proposed, as access to structure locations will be from both sides of the river. In addition, several steep slopes are located south of the Rock River on Segment 3D of the Alternate route. Specialized equipment may be used to traverse these areas if other access to these locations cannot be obtained.

Upon approval of a transmission line route, the preliminary access plan may be amended based on negotiations with local landowners and/or contractor requirements. For both routes, off-ROW access will be pursued to minimize potential environmental impacts associated with temporary stream crossings, wetland crossings, or other sensitive resources.

Paddock-Rockdale 345 kV Access Project Technical Support Document

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

Access methods may also include the use of ice roads, dry or frozen conditions, low ground pressure equipment, or construction mats. The goal of these alternative construction access methods is to prevent or minimize the temporary construction-related ground disturbances in order to reduce the potential for creating conditions that would be conducive to introducing non-native plants or disrupting desirable plant communities.

2.4.12 Waterway Permitting Activities

A summary of all waterways intersecting the Proposed and Alternate routes is presented in the Environmental Inventory Table located in Appendix E, Tables 2A and 2B. ATC anticipates needing permit approval (*Wis. Stat.* § 30.123) to temporarily cross streams along both routes. ATC is seeking approval to cross these streams with a TCSB. This regulated activity is listed in Appendix E, Tables 4A and 4B (Supplement to Form 3500-53). Additionally, the photos for each crossing are included in Appendix E, Exhibits 3A and 3B.

Proposed temporary stream crossings have been minimized by utilizing access from either side of the stream or by going around on existing public/transmission line ROW. ATC will work with private landowners to identify alternate access routes to further minimize the use of stream crossings, if possible. Some of these crossings may not be required if ATC is able to secure alternate access via private landowners. However, ATC has requested the issuance of a permit for all potential crossings in the event that avoidance is not possible.

Construction along the Proposed Route would require a total of 9 TCSBs. These crossings include 5 along Segment 2, 1 crossing along Segment 8, and 3 crossings along Segment 9 including Marsh Creek. The Alternate Route would require a total of 6 TCSBs. These crossings include 1 at Marsh Creek along Segment 7A, 4 along Segment 11A including Fisher Creek and Marsh Creek, and 1 along Segment 13. None of the proposed crossings are defined as an Area of Special Natural Resource Interest (ASNRI). However, Marsh Creek is located within the Cook Arboretum which is listed by the WDNR as an ASNRI.

Paddock-Rockdale 345 kV Access Project
Technical Support Document

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

2.4.13 Wetlands and Wetland Crossings

2.4.13.1 Wetland Delineation

ATC's environmental consultant, Natural Resources Consulting, Inc., completed wetland delineations within existing transmission line ROW on both the Proposed and Alternate routes between June and August 2006. The wetland delineations were completed in the field using the criteria and methods outlined in the USACE Wetland Delineation Manual (USACE 1987), subsequent guidance documents (USACE 1991, 1992), Guidelines for Submitting Wetland Delineations in Wisconsin to the St. Paul District Corps of Engineers (USACE 1996), and the Basic guide to Wisconsin's Wetlands and their Boundaries (Wisconsin Department of Administration Coastal Management Program 1995).

The field identified wetland boundaries were mapped using a Trimble GeoXT global positioning system (GPS) unit (sub-meter accuracy). Wetlands are identified only within the ROW corridor. Field identified wetlands are shown in yellow on the Environmental Features and Access Plan, Appendix A - Figures 15A and 15B.

Field access was limited to the existing ROW on both routes. The wetland boundaries were extended beyond the existing corridor where additional ROW is required. For areas adjacent to existing transmission ROW, wetland boundaries were sketched onto aerial photographs in the field. Where possible, these boundaries were field located by using offset points with the GPS unit.

The field delineated wetlands along the Proposed Route were extended an additional 25 feet on both sides of the ROW along a portion of Segment 2, and an additional 30 feet to the east of the existing ROW along a portion of Segment 8. For wetlands along the alternate route, the wetland boundaries were extended an additional 25 to 30 feet beyond the limits of the existing transmission ROW.

2.4.13.2 Remotely Identified Wetlands

Field access was limited to the existing transmission line ROW. In areas where field access was limited or not available, wetlands were identified by remote methods. In these areas, wetlands were conservatively estimated by interpretation of recent aerial photography, soil survey data, Wisconsin Wetland Inventory maps, and topographic maps. These wetlands were field checked to the extent possible from road or other public ROW during March 2007.

Paddock-Rockdale 345 kV Access Project Technical Support Document

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

The wetlands were digitized on aerial photos and shown on the Environmental Features and Access Plan, Appendix A, Figures 15A and 15B. The remotely identified wetlands are shown within the ROW corridor and are labeled as "aerial delineated wetlands." These wetlands are shown in red.

2.4.13.3 Wetland Crossings

Wetlands exist along both the Proposed and Alternate routes that would need to be crossed during transmission line construction. A preliminary access plan is discussed in Section 2.4.11 and provided on Figure 15A and 15B of Appendix A.

Based on preliminary route designs, it appears that a total of 32 structures along the Proposed Route would need to be placed in wetlands. Of this total, nine consist of the Y-12 69kV wood poles on Segment 8, and six are the low-profile double H-frame needed for the Jana Airport on Segment 2. A total of 21 structures along the Alternate Route would need to be placed in a wetland. Preliminary designs were developed to minimize impacts to wetlands to the extent possible. Because of span length requirements and ROW limitations, some impacts to wetlands are unavoidable.

In addition, access through several wetlands would be required in order to access pole locations. The structure locations and anticipated wetland crossings are summarized in an Environmental Inventory Table for each route (Appendix E, Tables 2A and 2B). Upon approval of a corridor, ATC and its contractors will attempt to minimize wetland impacts during final route design and access planning.

Paddock-Rockdale 345 kV Access Project
Technical Support Document

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

2.4.13.4 Sensitive Wetlands and Areas of Special Natural Resource Interest

The majority of wetlands that occur within the ROW of both the Proposed and Alternate routes support a fresh (wet) meadow plant community. These wetlands are typically degraded and contain very low plant diversity, specifically dominated by monotypic stands of reed canary grass (*Phalaris arundinacea*). Other plant species observed within the wet meadow wetlands included jewelweed (*Impatiens capensis*) and stinging nettle (*Urtica dioica*).

There are a few wetland complexes which support a variety of plant communities. However, nearly all of these wetlands are degraded and have a low level of vegetative diversity. These wetlands contain a combination of wet meadow and shrub-carr plant communities dominated by reed canary grass, common buckthorn (*Rhamnus cathartica*), sandbar willow (*Salix exigua*), and red-osier dogwood (*Cornus stolonifera*). Some of the forested wetlands within and adjacent to the alternate route are dominated by boxelder (*Acer negundo*), quaking aspen (*Populus deltoides*, FAC+), silver maple (*Acer saccharinum*, FACW), and American elm (*Ulmus americana*, FACW-).

The WDNR lists the Rock River as Land Legacy Water (LLW) and WNHI water. Both the Proposed and Alternate routes cross the Rock River. The Proposed Route crosses the Rock River twice, (shown as 17-S1 and 20-S1 in Appendix A, Figure 15A) on Segments 8 and 9, respectively. Therefore it is likely that the wetland associated with the Rock River at these locations (17-W1 and 20-W1) would be considered ASNRI wetlands. A temporary crossing of this waterway is not proposed, and construction of structures is not anticipated within these areas.

The Alternate Route crosses the Rock River twice, (shown as 40-S1 and 45-S1 in Appendix A, Figure 15B) on Segments 3C and 7A, respectively. Therefore it is likely that the wetlands associated with the Rock River at these locations (40-W3 and 45-W1) would be considered ASNRI wetlands. Construction of one structure is anticipated within 40-W3. A temporary crossing of this waterway is not proposed.

Paddock-Rockdale 345 kV Access Project
Technical Support Document

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

The WDNR lists Bass Creek as an Exceptional Resource Water (ERW). Both the Proposed and Alternate routes cross Bass Creek. The Proposed Route crosses Bass Creek (shown as 30-S2 and 30-S3 in Appendix A, Figure 15A) on Segment 14. Therefore it is likely that the wetland associated with Bass Creek at this location (30-W1) would be considered an ASNRI wetland. Two structures are currently located within this wetland and would be replaced with three structures due to span length requirements and ROW limitations. Access to these structures can be accomplished from public roads on either side of the waterway, therefore temporary crossing of this waterway is not proposed.

The Alternate Route crosses Bass Creek (shown as 58-S1 in Appendix A, Figure 15B) on Segment 20. Therefore it is likely that the wetlands associated with Bass Creek at this location (58-W1 and 58-W2) would be considered an ASNRI wetland. The placement of structures is not anticipated within this area. A temporary crossing of this waterway is not proposed since it is anticipated that access to the structure locations will be obtained from public roads on either side of the waterway.

Cook Arboretum, located on Segment 7A of the Alternate Route, is listed as an ASNRI by the WDNR. One waterway (shown as 46-S1, Marsh Creek) and one wetland (46-W1) are located within the Cook Arboretum. Although the waterway and wetland are not specifically identified as an ASNRI by the WDNR, both would likely be considered such due to their location within the arboretum. The wetland contains a moderately diverse wet meadow and shrub-carr plant community that is not dominated by invasive species. A temporary crossing of the waterway is proposed. Placement of one structure within wetland 46-W1 is not anticipated.

The existing cleared ROW within the Cook Arboretum consists of restored prairie. The adjacent lands are comprised of upland forest dominated by mostly oaks (*Quercus spp.*), hickory (*Carya ovata*), cherry (*Prunus spp.*), and basswood (*Tilia americana*). Construction of this route would require additional ROW in this area. Approximately 5 acres of upland forest would need to be cleared to accommodate the ROW requirements of the line.

Forested wetlands are located along both the Proposed and Alternate routes. Where additional ROW is needed, areas within the new corridor would be cleared of trees and other woody vegetation. Clearing forested wetland areas results in a conversion of wetland types to wet meadow or shrub-carr.

**Paddock-Rockdale 345 kV Access Project
Technical Support Document**

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

The Proposed Route is mostly located on existing cleared and maintained transmission ROW. Forested wetland areas exist along Segment 8 where additional ROW is required. The construction of the line in this area would result in the conversion of approximately 0.2 acres of forested wetland.

The Alternate Route includes areas of new and existing ROW corridor. The construction of the Alternate Route would result in the conversion of about 8.9 acres of forested wetland.

The implementation of Best Management Practices along with ATC's standard environmental protection procedures will avoid and minimize wetland impacts to the extent possible.

2.4.14 Mapping Wetland and Waterway Crossings

The centerline of both the Proposed and Alternate routes are shown on the 2005 NAIP aerial photography in Appendix A, Figures 6A and 6B, respectively.

The centerline of both the Proposed and Alternate routes is also shown on United States Geological Survey (USGS) topographic mapping in Appendix A, Figure 7A and 7B, respectively.

Refer to Appendix A, Figures 15A and 15B for recent aerial photographs overlaid with the following features: transmission line, ROW, waterways, WWI, field delineated wetlands (shown in yellow), aerially delineated wetlands (shown in red), hydric soils, proposed temporary bridge locations, and locations of proposed access routes through remote areas containing wetlands or waterways.

2.4.14.1 Recent Air Photo (line & ROW only)

2.4.14.2 Topographic Map

2.4.14.3 Recent Air Photo (including: transmission line, ROW, pole locations, waterways, WWI, delineated wetlands, hydric soils, temp. bridge locations, grading or riprap locations, and proposed access routes)

Paddock-Rockdale 345 kV Access Project
Technical Support Document

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

2.5 CONSTRUCTION METHODS

2.5.1 General Construction Information

The following discussion is related to ATC specifications used in overhead transmission line construction. See Section 2.6.7 for additional discussion related to substation construction.

2.5.1.1 Type and Location of Structures

The project is proposed as a primarily double-circuit 345 kV transmission line. See Section 2.1.2 and Figures 1 and 2 in the Introduction and Overview section of this document for a description of the expected structure type to be used for various segments of the transmission line route depending on the route chosen by the Commission.

Weathering steel monopole structures are proposed for the project due to the structure configurations and span lengths. A table listing existing and proposed structure types by line segment is located in Appendix D, Exhibit 1.

Foundations for all steel structures, with the exception of the structures at Jana Airport, will be concrete caisson type foundations. Concrete foundations are required to provide the necessary strength for the structures to enable them to resist the large overturning reactions due to the heavy conductor loads. All monopole steel structures will be self-supporting. The 12 three-pole structures, used in sets of two, near the Jana Airport will be direct-embedded steel poles. Guying will be governed by design. Ahead, back and side guys are anticipated.

Proposed Route

In Segment 16 the existing steel H-frame structures will be utilized. In Segment 8 the existing lattice towers will be utilized. Double-circuit configuration transitioning to 3-pole, steel H-frame type structures is proposed for six spans in Segment 2 near the Jana Airport. Triple-circuit configuration on existing ROW is proposed for Segment 1, which comprises approximately 22% of the Proposed Route. The remainder of the Proposed Route segments will be double-circuit monopole structures. The table below lists the proposed numbers of structures and type by segment.

**Paddock-Rockdale 345 kV Access Project
Technical Support Document**

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

Proposed Route

Segment #	Proposed Structure Type	# of Structures
16	Existing H-Frame W-10	3
14	Dbl. Cir. Steel Pole W-10/W-4	43
9	Dbl. Cir. Steel Pole W-10/W-4	42
81	Existing Steel Lattice Dbl. Cir. W-10/W-4	40
22	Dbl. Cir. Steel Pole W-10/W-4	21
1	Triple Cir. Steel Pole W-10/W-4 with X-31 Underbuilt	50
		199

Note(1): A 1.7-mile section of Y-12 will be built parallel to the existing steel lattice structures utilizing 23 wood pole structures

Note(2): Approximately 0.5 mile of Segment 2 will have six(6) 3-pole structures for each of the W-10 and W-4 circuits near the Jana Airport.

Alternate Route

Triple-circuit configuration (345/138/138 kV) is proposed for Segment 11A, which comprises approximately 11% of the Alternate Route. Segments 5 and 20 will both be constructed as single-circuit 345 kV lines on new ROW. Segment 5 is adjacent to an existing transmission corridor, while Segment 20 is entirely new ROW. All Segment 3 sections will be double-circuit steel monopole construction with the exception of Segment 3B. Segment 3B will be single-circuit steel monopole construction. Both Segments 3B and 3C will be on new ROW. Triple-circuit configuration on existing ROW is proposed for Segment 1, which comprises approximately 22% of the Alternate Route as well. The table below lists the proposed numbers of structures and type by segment.

Paddock-Rockdale 345 kV Access Project
Technical Support Document

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

Alternate Route

Segment #	Proposed Structure Type	# of Structures
15	Dbl. Cir. Steel Pole W-10/X-39	29
17	Dbl. Cir. Steel Pole W-10/X-39	9
13	Dbl. Cir. Steel Pole W-10/X-12	14
20	Sgl. Cir. Steel Pole W-10	10
11A1	Triple Cir. Steel Pole W-10, with Underbuild X-7/X-32	46
19B	Sgl. Cir. Steel Pole W-10	1
19A	Dbl. Cir. Steel Pole W-10/Y-38	6
18B	Dbl. Cir. Steel Pole W-10/Y-38	5
18A	Sgl. Cir. Steel Pole W-10	10
7A	Dbl. Cir. Steel Pole W-10/Y-151	30
5	Sgl. Cir. Steel Pole W-10	7
3D	Dbl. Cir. Steel Pole W-10/X-31	31
3C	Dbl. Cir. Steel Pole W-10/Y-61	12
3B	Sgl. Cir. Steel Pole W-10	9
3A	Dbl. Cir. Steel Pole W-10/X-31	15
1	Triple Cir. Steel Pole W-10/W-4 with X-31 UB	50
		284

**Paddock-Rockdale 345 kV Access Project
Technical Support Document**

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

2.5.1.2 Existing Structures Status

Proposed Route

All existing structures on the Proposed Route will be removed and scrapped, with two exceptions: (1) in Segment 8 the existing double-circuit 345 kV lattice structures will be modified for reuse and (2) in Segment 16 the existing H-frame structures will remain. The 69 kV transmission line Y-12 currently occupying approximately 1.5 miles of the Segment 8 lattice towers will be relocated as a rebuilt parallel line.

Existing lattice tower and steel pole foundations, as well as all concrete embedded steel pole sections in Segments 1, 2, 9, and 14, will be cut off a minimum of three feet below ground line and the surface graded to match existing conditions.

Alternate Route

There are a variety of existing structures on the Alternate Route. Beginning at the Paddock Substation, Segment 15 is a single-pole wood structure line using horizontal post insulators. These structures will be removed and replaced with double-circuit steel monopole structures. Segment 17 is similar construction to Segment 15 with the exception of no underbuild. These structures will be replaced with double-circuit steel monopoles.

Segment 13 is construction with wood H-Frame structures, all of which will be removed and replaced with double-circuit steel monopole structures.

Segment 20 has no existing structures.

Segment 11A is presently constructed using steel lattice structures. These structures will be removed and the leg foundations cut away to a depth of 3 feet below the existing ground line.

Segments 19B and 18A are new ROW with no existing structures. Segments 19A and 18B presently consist of steel lattice construction. These structures will be removed and the leg foundations cut away to a depth of 3 feet below the existing ground line.

Segments 7A and 3B currently utilize single-pole wood construction that would be removed entirely.

Segment 5 is new ROW with no existing structures.

Paddock-Rockdale 345 kV Access Project Technical Support Document

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

The existing double-circuit steel lattice structures in Segments 3A and 3D will be removed because they are inadequate to support a 345 kV line. The leg foundations will be removed to a depth of 3 feet below the existing ground line.

Segment 1 is common to both the Proposed Route and the Alternate Route. In either case, the double-circuit steel poles will be removed and new triple-circuit steel monopoles will be installed. The existing foundations will be removed to a depth of 3-feet below the ground line.

2.5.1.3 Method of Structure Placement

Structure installation will consist of a combination of both energized and de-energized construction. The new structure is installed in coordination with the old structure removal. A typical type work plan is included in Appendix I, Exhibit 1

2.5.1.4 Concrete Foundation Type (size & depth)

The method of installation, diameter and depth of the excavation will vary depending on the soil capability and structure loadings. Excavation is required for all structures whether direct-embedded or requiring a foundation. The depth of the excavated hole; (and therefore, the amount of excavated material) depends on the soil conditions encountered at the proposed structure location. Excess soils from excavations in uplands may be spread in the ROW and stabilized (seeded and/or mulched) or hauled to an offsite disposal location depending on property owner's requirements. In any area where conditions may be conducive to erosive losses (erodible soils, slopes, wetlands or streams adjacent to site), appropriate erosion control measures as described in the WDNR Construction Site Best Management Practices will be installed and maintained until final restoration and revegetation is complete.

For direct-embedded poles (no foundation required), a hole is excavated to the appropriate depth. The base of the structure is placed into the excavated hole, and the area around the pole is backfilled with clean granular fill (typically gravel) to within one foot of the surface. The balance (top 12 inches) of the excavation is backfilled with native soils.

Paddock-Rockdale 345 kV Access Project Technical Support Document

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

For structures requiring a foundation, the required hole is excavated. Concrete caissons are formed using a rebar cage and anchor bolts and placed into the excavation. The excavation is then filled with concrete to a point where the rebar cage and anchor bolts are covered leaving only the threaded bolts exposed. The complete caisson is allowed to cure for approximately one week to develop necessary strength. After the caisson is cured, the steel pole structure is mounted to the caisson using the exposed bolts. In general the excavated holes will range from 5 to 12 feet in diameter and may be 9 to 45 feet in depth, or greater.

2.5.1.5 Type of Machinery

Construction equipment normally used in transmission line construction is expected to be used. These include dump trucks, backhoe, drill rigs, cranes and related equipment. When utilizing robotic arms, adapters are used to mount the arms to a typical utility truck. Additional detail on energized construction methods is located in Appendix I, Exhibit 1.

Tracked, rubber-tired or other low-ground pressure equipment may be utilized in some areas to lessen environmental impact (when needed).

2.5.1.6 Construction Disturbance Zone

Construction will be confined to the ROW and along access routes. ATC will utilize existing roads or ROW, and/or arranged access locations where roadways are not present. Most disturbances will likely occur in the area immediately surrounding transmission line structures. In areas where access cannot be gained from existing roads, some disturbance from vehicular traffic may also occur. Disturbance at these areas may include clearing of vegetative cover, soil compaction, vehicular tracking, and some topsoil disturbance.

2.5.1.7 Location of Staging Areas

The table below describes the seven laydown areas ATC has selected and the current status of the lease options. Site maps are provided in Appendix A, Figure 16. Additional description of the environmental impacts in laydown areas is located in Section 2.5.7.

Paddock-Rockdale 345 kV Access Project
Technical Support Document

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

Site #	Parcel Owner	Owner's Address	Legal Description	Municipality	County	Size Acres	Lease Option Status
1	John & Jeanie Haney	3256 S. Madison Rd., Beloit, WI 53511	NW 1/4 of the SE 1/4 Section 7, T1N-R12E	Town of Beloit	Rock	12	Signed
2	Town of Beloit	Walters Rd., Beloit, WI 53511	NE 1/4 of the NW 1/4 Section 2 T1N-R12E	Town of Beloit	Rock	15	Pending
3	Gaylen & Carol Reilly	N. Polzin Rd., Janesville, WI 53545	NW 1/4 of the NE 1/4 Section 18 T3N-R12E	Town of Janesville	Rock	16	Signed
4	Crazy Acres, Inc.	County Trunk F, Edgerton, WI 53534	SE 1/4 of the SW 1/4 Section 28 and the NE 1/4 Section 33 T4N-R12E	Town of Fulton	Rock	15	Signed
5	Hendricks Development	1220 W. Fulton St., Edgerton, WI 53524	NW 1/4 of the SW 1/4 Section 4 T4N-R12E	City of Edgerton	Rock	7	Pending
6	TMT JR LLC	Goede Rd., Edgerton, WI 53534	NW 1/4 of the SW 1/4 and the SW 1/4 of the SW 1/4 Section 26 T5N-R12E	Town of Albion	Dane	14	Signed
7	HEPTA, Inc.	372 Koshkonong Rd., Cambridge, WI 53523	SE 1/4 of the SW 1/4 and the SW 1/4 of the SE 1/4 Section 14 T6N-R12E	Town of Christiana	Dane	12	Pending

Paddock-Rockdale 345 kV Access Project
Technical Support Document

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

2.5.1.8 Construction Methods

ATC will cooperatively develop a Construction Management Plan (CMP) working with the construction contractor for the project. The purpose of this CMP is to serve as a guidance document for persons working on the ROW to ensure understanding of and compliance with permit conditions, CPCN Order Points, ATC requirements, landowner agreements, and any other applicable federal or state requirements.

The CMP will provide site specific information regarding the implementation methods used to minimize impacts and comply with regulatory and other requirements. The CMP may include maps indicating structure locations, ATC approved access routes and construction techniques and land owner information as appropriate. The CMP will address sensitive resources described in Section 2.4 as appropriate, and will be developed using information provided in applicable sections 2.4, 2.5, 2.6, and Appendix E of this application. For example, the CMP may address standard construction techniques in wetlands and around waterways and waterway crossing locations, protected species protocols, archaeological resource protection methods, and erosion control techniques, as applicable to the project. In addition, this document may incorporate plans for construction activities, including materials management, invasive species management, dewatering, type of field marking and staking used for the project, restoration, and waste management, and spill prevention and contaminant cleanup plans as applicable to this project.

Site specific information and permit requirements are needed to fully develop the CMP, consequently, it will be developed after a final route has been selected and prior to construction. The primary purpose of the CMP is to provide guidance to field personnel. However, it can be made available to PSCW and WDNR upon request.

Paddock-Rockdale 345 kV Access Project
Technical Support Document

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

2.5.1.8.1 Agricultural Areas

Agricultural areas commonly occur along both routes. In these areas, ATC will use general upland construction procedures utilizing standard construction equipment. These construction practices will conform to Best Management Practices to minimize environmental impact (e.g., soil erosion). The access plan provided in Appendix E, Figure 15, has been designed to reduce impacts to wetlands and waterways, however ATC will work with landowners to minimize impacts to agricultural lands where possible. For example, ATC will strive to access structure locations using the ROW and public roads. Landowners will be compensated for crop and other damages arising from construction activity consistent with the terms in the property easements.

ATC will work with potentially affected agricultural landowners to ensure that farm disease mitigation currently practiced by the landowners will be adhered to during construction of the transmission line.

Costs associated with farm disease mitigation practices vary widely depending on the practices employed. Some assumptions about the cost of farm disease mitigation were included in Section 2.1.7.3.3; however, these may need to be reviewed and updated based on discussions with individual landowners after a route is selected.

2.5.1.8.2 Forest Lands

To accommodate transmission line construction, vegetation will be cleared for the full width of the ROW to the extent necessary. This allows safe ingress and egress of construction equipment, and ensures safe clearances between vegetation and the transmission line once construction is complete.

After construction is complete, vegetation in the ROW will be maintained using the Wire Zone/Border Zone approach which allows for different, yet compatible, vegetation types in these separate zones. This approach to vegetation management is required to facilitate the safe and efficient operation and maintenance of the transmission line. The Wire Zone is the area immediately under the transmission conductors in their wind-displaced position. Here vegetation is managed for low growing forbs and grasses. The Border Zone may contain short-growing woody species such as shrubs and trees with a maximum mature height of less than 15 feet in addition to the forbs and grasses.

Paddock-Rockdale 345 kV Access Project Technical Support Document

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

Vegetation will be cut at or slightly above the ground surface. Root stocks will be left in place to regenerate after construction, except in areas where stump removal is necessary to facilitate the movement of construction vehicles along the ROW. Re-growth of tall-growing species under the transmission line will not be allowed. Where permission of the landowner has been obtained, stumps of tall-growing species will be treated with an herbicide to discourage re-growth. The disposition of trees of commercial or other value will be negotiated with the landowner prior to the commencement of land clearing and included in the easement agreement.

2.5.1.8.3 Surface Waters and Wetlands

Construction activities typically will not take place on the stream banks or close to the water, other than cutting or trimming trees that exceed the maximum height limit and placement of temporary clear span bridges. In-stream use of heavy equipment will not be required on this project.

Waterways

To the extent practicable, temporary stream crossings will be avoided by utilizing existing bridges or culverted crossings or by accessing riparian areas from nearby roads on either side of a stream. Where necessary and authorized by the WDNR, TCSBs will be placed to avoid in-stream disturbance (See Appendix A, Figures 15A and 15B for anticipated locations of TCSBs). Each TCSB will consist of construction mats placed to span the stream bank. TCSB cross-section drawings are located in Appendix E, Figures 3A and 3B. Preparation for setting the bridge may include minor blading and excavation confined to the minimum area necessary for safe TCSB installation. Removal of trees, shrubs, and other shoreline vegetation will be kept to a minimum. Proper erosion control measures will be implemented and maintained during and after the utilization of the temporary crossing. Access roads will not need to be constructed to install these bridges. For those streams that will not be crossed by construction vehicles and where stream crossing permits have not been acquired, wire will be pulled across those waterways by boat or by a person wading across the stream.

Paddock-Rockdale 345 kV Access Project Technical Support Document

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

Wetlands

No temporary or permanent fill placement is proposed for wetland access routes. When wetland access is required, disturbance to wetlands will be reduced by implementation of several specialized construction techniques, which may include timing wetland construction during dry or frozen conditions and the use of low ground pressure tires, specialized track vehicles, and/or matting materials to help minimize soil and vegetation disturbances. Large foundation auguring equipment, heavily loaded trucks, cranes, and specialized line construction equipment must access structure locations. If necessary, pre-fabricated construction mats would be used to spread the concentrated axle loads from this equipment over a much larger surface area thereby reducing the bearing pressure on fragile soils.

2.5.2 Underground Construction

No underground transmission line construction is proposed as part of this project. All proposed transmission lines will be above ground.

A number of the transmission line route segments on the Alternate Route are located along road ROW with existing overhead distribution lines as underbuild. Due to the increased height of the transmission structures with distribution underbuild, some distribution lines may be converted to underground distribution. Based on cost estimates provided by the affected distribution companies, it may prove cost-effective to locate single-phase distribution circuits underground.

2.5.3 Waterway Crossings

2.5.3.1 Method of Crossing

Temporary clear span bridges are proposed to cross streams as identified in Appendix E, Figures 3A and 3B. A drawing of a typical crossing method, photographs of the crossing locations, and cross sections are also provided in Appendix E, Exhibits 2 and 3.

2.5.3.2 Estimate area and volume of excavated materials

Except for minor blading that may be required to properly stabilize the bridge, excavation is not anticipated to be required for the waterway crossings.

The volume of excavated upland materials is dependent upon the specific route chosen and site characteristics such as topography, structure height and angle, and soils.

**Paddock-Rockdale 345 kV Access Project
Technical Support Document**

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

2.5.3.3 Access Roads, Temporary Bridges, Construction Methods

Until specific routes are determined, the access to any particular segment cannot be fully determined. At this time, access routes have been developed in a manner that strives to avoid and minimize waterway and wetland impacts, and to accommodate required construction equipment. Landowner access and easement permission efforts for construction will be ongoing in an effort to minimize the crossing of waterways and wetlands and to accommodate construction equipment.

Temporary clear span bridges will be required to cross 9 waterways along the Proposed Route, and 6 waterways along the Alternate Route. No temporary or permanent fill will be required on access roads near waterways. Appropriate erosion control measures will be implemented and maintained at the stream crossing.

2.5.3.4 Underground Crossing Construction

The proposed transmission line will be constructed above ground. No underground crossings will be constructed.

2.5.4 Wetland Crossings

2.5.4.1 Methods

Wetlands occur along the Proposed and Alternate routes. Access through many of these wetlands will be required during transmission line construction. Methods that may minimize the impact associated with access include, but are not limited to: ice roads, low ground pressure equipment, construction mats, temporary access roads, and restricting the length and width of the access path. The locations and access within these wetlands is discussed in Section 2.4.12.

The following summarizes construction techniques that can be utilized for crossing wetlands. The construction technique identifiers (i.e., CT-2, CT-3) are used to indicate the crossing method in the Environmental Inventory Table provided in Appendix E, Tables 2A and 2B.

Paddock-Rockdale 345 kV Access Project Technical Support Document

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

CT-2: Unstable Soil Conditions

If saturated or unstable soil conditions exist at a construction location, several construction techniques may be implemented to reduce the effects on wetland soil structure and dependent functions, including hydrology and the wetland's capacity for re-vegetation of native species. These techniques include the use of the following: construction during frozen conditions, the use of ice roads, construction mats, low ground pressure or tracked vehicles in areas where the soils are saturated or not frozen, and TCSBs installed in wetlands that contain cross-cut channels.

CT-3: Stable Soil Conditions

If the wetland to be crossed has drier, stable, and cohesive soils or is frozen, construction will proceed in a manner similar to upland construction. If the wetland soils are not saturated at the time of construction and can support both tracked and/or rubber-tired equipment, ATC will construct in that area using construction mats only when needed to minimize impacts.

CT-4W: Wire Handling/Stringing - Wetlands

Wire handling and stringing will still be necessary in wetlands where heavy equipment crossing is restricted. This method would be used for wetlands identified as having special resources needing additional protection and where access across the wetland would be available from the existing ROW. For CT-4W wetland crossings, use of heavy equipment will be restricted. Smaller vehicles, such as a small tracked vehicle or an all-terrain vehicle may be used to pull the line through the wetland. Construction traffic will be limited, and in addition, construction mats will be used if necessary.

2.5.4.2 Invasive Species Method Prevention

If it is evident that transmission line construction activities could spread invasive plant species to new areas, appropriate protection measures can be implemented. These measures include: avoidance of infested areas, removal or control of small populations of plants, scheduling construction activities during the plant's dormant period, and cleaning of equipment prior to accessing uninfested areas.

**Paddock-Rockdale 345 kV Access Project
Technical Support Document**

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

2.5.4.3 Excavated Materials

For pole placement in wetlands, the estimated area of excavation will range from about 30 to 114 square feet, and the volume of excavated material will range from about 500 to 5000 cubic feet at each structure location. Material not required for backfilling will be spread in an upland area within the ROW or placed in an upland location. If there is a large amount of excess soil, other appropriate disposal methods will be evaluated.

2.5.4.4 Dewatering Methods and Fill Material Stockpile locations

The only fill required in wetlands for which ATC seeks authorization will be for the structures and backfilling excavations after structure placement. In wetlands, this material will be stockpiled temporarily either on frozen ground or on wood matting and geotextile fiber. Fill will not be required in wetlands to provide access. Dewatering may be necessary at some structure locations. Refer to Section 2.5.8 for further discussion of dewatering methods.

2.5.5 Re-vegetation

The need for and approach to site restoration and re-vegetation will be based on the degree of disturbance caused by construction activities and the ecological setting of each site and will need to reflect and satisfy the requirements of the property owner. If construction can be accomplished without creating appreciable soil disturbance, restoration may not require re-vegetation efforts. Restoration activities will be implemented following the completion of construction activities. These activities will begin as soon as practical and as allowed by seasonal conditions.

2.5.5.1 Restoration Plan

A restoration plan for disturbed sites will be developed based on the level of ground disturbance and the ecological setting. For example, if construction results in disturbance of a turf-grass sod area, the type of seed mix used for re-vegetation would be different than if the disturbance occurred in a wet meadow community. Re-vegetation in disturbed areas may be facilitated by native seed banks. In cases where there is no sign of re-growth of pre-existing vegetation species in the first month of the subsequent growing season, an assessment will be made and if necessary, an appropriate seed will be brought in and properly applied. ATC will monitor the sites that were seeded to ensure growth occurs.

**Paddock-Rockdale 345 kV Access Project
Technical Support Document**

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

2.5.5.2 Post-Construction Monitoring and Maintenance

2.5.5.2.1 Re-vegetation & Site Restoration Plan

Site restoration will be completed as described in Section 2.5.5. Restoration will be dependent on post construction site conditions and landowner concerns. A post-construction monitoring plan will be developed once construction is complete and an assessment of environmental impacts has been conducted. The monitoring plan will focus on the following: wetlands, waterway crossings, and areas where special site specific erosion controls were implemented. Most areas will be monitored until 70% revegetation has occurred.

2.5.5.2.2 Management Plan for Invasive Species

Field surveys have been conducted to identify large populations of invasive species. Reed Canary Grass is prevalent throughout most wetlands on both the Proposed and Alternate routes. Appropriate measures, as described in Section 2.5.4.2, will be implemented if it is determined that construction activities may potentially impact the spread of invasive species. A post-construction assessment of these areas, and if necessary, the areas will be monitored for up to three years.

2.5.6 Erosion Control Plan (sites greater than 1 acre)

The proposed transmission line and Rockdale Substation are subject to WDNR requirements for construction-time erosion control. In addition, the Rockdale Substation expansion is also subject to long-term stormwater management performance criteria promulgated by the State. The WDNR permit requirements for construction-time erosion control and long-term stormwater management are specified in *Wis. Admin. Code* Section NR 216. Under NR 216, permits are required for construction sites larger than 1 acre, which the proposed transmission line and the Rockdale Substation expansion will exceed.

NR 216 authorizes WDNR to issue a General Wisconsin Discharge Elimination System (WPDES) Permit, after review of a Notice of Intent submittal, except where the Department determines that stormwater runoff is a significant source of pollution, where previously issued general permit conditions have not been complied with, where technology changes have occurred, or where specific effluent limitations apply. None of these exceptions apply to the proposed transmission line; therefore, the Notice of Intent submittal is expected to result in issuance of a General WPDES Permit for the project.

Paddock-Rockdale 345 kV Access Project
Technical Support Document

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

Performance standards for stormwater discharges authorized under NR 216 are specified in NR 151. Additionally, WDNR has developed guidance criteria for design of erosion control measures to meet these standards, also known as Technical Standards or Conservation Practice Standards.

NR 151 specifies that erosion control plans include:

Best Management Practices that, by design, achieve, to the maximum extent practicable, a reduction of 80% of the sediment load carried in runoff, on an average annual basis, as compared with no sediment or erosion controls, until the construction site has undergone final stabilization. No person shall be required to exceed 80% sediment reduction to meet the requirements of this paragraph. Erosion and sediment control BMPs may be used alone or in combination to meet the requirements of this paragraph. Credit toward meeting the sediment reduction shall be given for limiting the duration or area or both of land disturbing construction activity, or other appropriate mechanism. (NR 151.11(6) (a))

The NR 151 standard listed above suggests that the same level of erosion control would be required for sites, regardless of area or erosion potential, since the criterion is “compared to no controls.” Discussions with WDNR staff on previous transmission line projects indicate that the intent of the criterion is to encourage temporary and permanent restoration, as soon as possible, after disturbance and to focus on more robust perimeter controls for larger sites. The intent behind this approach is recognizing that the primary focus in erosion control is preventing total sediment loss from a given area rather than a percentage reduction from a given area. Establishing a performance objective that meets this intent involves setting a maximum acceptable soil loss rate for the entire project.

The NR151 criterion stipulates that erosion from any part of a construction site cannot exceed 7.5 tons/acre/year. This standard was developed based on comparisons of loss rates from controlled vs. uncontrolled construction sites. Use of a maximum sediment loss rate standard instead of a percentage reduction standard allows for:

- Development of erosion control practices, and groups of several BMPs in series, that achieve the numeric loss rates;
- Use of data on specific soil types, slopes, and land cover in developing BMP plans;
- Analysis of the benefit of reducing the duration of exposure of unstabilized soil during the construction program; and

Paddock-Rockdale 345 kV Access Project Technical Support Document

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

- More robust erosion control methods are required in areas of high erosion potential (compared to a typical construction site) based on the absolute threshold criterion than would be required for the percentage reduction threshold.

Erosion Control Plan Approach

Once a transmission line route has been selected, ATC will prepare an Erosion Control Plan. For most of the transmission line corridor, the erosion control plan will consist of decision flow charts that are prepared to specify the location and type(s) of BMPs that can be utilized to meet the maximum soil loss standard outlined above. The decision flow charts will be assembled based on construction activity, site conditions (soils, slopes, etc.), time of year, and nature and length of disturbance. To aid in appropriate decisions in the field, the Erosion Control Plan will include base maps with necessary data such as contours, slopes, soils, natural resource features, and construction information that can be used to select the required BMP or set of BMPs.

**Paddock-Rockdale 345 kV Access Project
Technical Support Document**

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

2.5.6.1 Erosion Control Methods and Materials

Best Management Practices and erosion control methods will vary depending on the construction activity, time of year, and site soil and slope conditions at the time of construction. Examples of BMPs that will be instituted for this project include:

- Maintaining existing vegetative cover during construction to the maximum extent practicable;
- Seeding, mulching, and/or polymer application for stabilizing areas disturbed by construction activities;
- The use of low ground pressure equipment, ice roads, construction matting, or other applicable methods as necessary to support heavy construction equipment in unstable areas;
- Installing tracking pads at strategic access points to reduce offsite migration of sediment;
- Establishing perimeter sediment control practices as necessary such as vegetated buffers and silt fence;
- Preventing channel or gully erosion using stone check dams or temporary ditch checks as necessary;
- Treating water recovered during dewatering operations via on-site filtration, on-site infiltration, or off-site disposal; and
- Constructing off-site diversions (limited applicability for the transmission line but may be appropriate for the substation) to reduce the erosion potential for disturbed soils.

Other BMPs will be utilized as conditions warrant. Erosion control detail drawings will be included with the Erosion Control Plan.

Best Management Practices will be implemented in accordance with ATC's typical construction practices and WDNR technical standards for construction site erosion and sediment control. When applicable, only materials identified on the Wisconsin Department of Transportation's Product Acceptability List (PAL) will be used for implementation of the Erosion Control Plan.

Paddock-Rockdale 345 kV Access Project
Technical Support Document

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

2.5.6.2 Erosion Control Measure Site Plan

Site maps showing the transmission line route; along with construction information, natural resource features, site physical features and erosion control information will be prepared and included in the Erosion Control Plan once a route is selected.

2.5.6.3 Sequence of Erosion Control Measures

Anticipated sequencing for the transmission line construction along with minimum construction-time erosion control practice description includes:

- Surveying and Staking of ROW – These activities are not considered to be land disturbing activities, thereby erosion control measures are not required.
- Development of ROW Access – Silt fence, vehicle tracking pads, and other applicable erosion control measures will be installed as ROW access is gained. Disturbance of the access path may be intermittent. In some cases, the anticipated time interval between disturbance-causing activities may be more than one month, and it is not feasible to complete permanent restoration. In these areas, an assessment will be made and if necessary, temporary erosion control measures (erosion control mats, seeding or mulching) will be placed on the access path. Installation of temporary erosion control measures will be weather dependent.
- Temporary Staging and Materials Storage Areas – Staging and storage areas which are constructed and result in ground disturbance will have perimeter sediment controls placed on the down slope side of the site. If access to the storage area is off a permanent road, a vehicle-tracking pad will be placed at the intersection, if field conditions require.
- Cleanup and Restoration of ROW – Cleanup and permanent restoration will occur as described in Section 2.5.5.

Paddock-Rockdale 345 kV Access Project Technical Support Document

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

2.5.6.4 Off-site Diversion Methods

It is not anticipated that offsite diversion methods will be used as a construction-time erosion control practice for the proposed transmission line. However, offsite diversions may be planned as part of the post-construction stormwater management plan for the Rockdale Substation. The diversions may be required to reduce the volume of stormwater runoff entering the substation area and entering the stormwater retention and infiltration areas. This is accomplished by routing run-on drainage in constructed swales to existing drainage features. Other BMPs will be utilized to control flow velocities until the constructed swales are stabilized.

2.5.6.5 Provisions for Inspection and Maintenance

To comply with State regulations, during active construction qualified ATC staff or representatives will inspect erosion and sediment control practices a minimum of once per week, and within 24 hours following a rainfall of 0.5 inches or more in accordance with *Wis. Admin. Code* ch. NR 216 and the WPDES General Permit Conditions. Written documentation of the inspection will be maintained by the ATC's Environmental Monitor and/or Construction Coordinator and will describe any corrective measures taken, if applicable. All corrective action will be taken within 24 hours of inspection unless soil conditions are such that taking the corrective action will cause excessive erosion, soil disturbance, or environmental impact. The decision for the timing of the corrective action will be made by the qualified ATC staff or its representatives with documentation provided to the appropriate agencies.

Paddock-Rockdale 345 kV Access Project Technical Support Document

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

2.5.7 Materials Management Plan

A materials management plan under *Wis. Stat.* ch. 30 and *Wis. Admin. Code* ch. NR 216 will be required for this project. However, a detailed materials management plan cannot be prepared until a route is chosen and final design of the project is complete. The following is a general summary of ATC's Best Management Practices. The following discussion addresses the applicable portions of Sections 2.5.7.1 through 2.5.7.4.

Equipment Staging Areas

Construction materials, transmission line structures, cables, equipment and vehicles, and related materials, will be stored on the ROW and at temporary staging areas or laydown yards. Construction laydown yards will be required throughout construction for the storage and staging of construction equipment and materials. Potential laydown yards have been identified based on the construction requirements of the project, proximity to work areas, and environmental and landowner impacts. These sites are listed in Section 2.5.1.7. The selection of any additional lay down yards will be reviewed and approved by ATC prior to use by the Contractor. Identified sites have been evaluated for potential impacts or concerns with respect to wetlands, waterways, natural features, grading and clearing requirements, threatened and endangered resources, and cultural or archaeological concerns.

Laydown yards have been selected to minimize the amount of disturbance and preparation required to provide suitable surfaces for temporary storage of construction materials and equipment. The amount of grading and clearing at these sites will be kept to a minimum as sites are chosen with these considerations in mind. It is preferable to secure sites that require minimal site preparation. For example, sites that are paved and have been previously graded and cleared of vegetation, such as parking lots, old gravel pits, and fields, are ideal locations for laydown yards.

Laydown yards will not be located within wetlands, and if a selected site is located in close proximity or upslope of a wetland or waterway, appropriate erosion control measures will be implemented in order to prevent impacts. In addition, access points for these work sites, and the haul routes to and from these sites will also be selected, located, and designed to minimize the disturbance to soils and sensitive natural resources to the greatest degree practical, and to minimize off-site tracking.

Paddock-Rockdale 345 kV Access Project
Technical Support Document

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

Based on the criteria discussed above, ATC has identified seven potential sites that can be utilized as laydown yards on both the Proposed and the Alternate routes (see Section 2.1.7). Site 3 has been identified for potential use on the proposed Route, site 2 on the Alternate Route and sites 1, 4, 5, 6 and 7 are suitable for use on either transmission line route. Site maps are provided in Appendix A, Figure 16.

An off-site environmental review of the laydown areas was conducted. The following resources were utilized in the evaluation: WDNR Natural Heritage Inventory Database, WDNR Wisconsin Wetland Inventory, Wisconsin State Historical Society database, county soil maps, and aerial photography.

Selected sites include one parking lot and six agricultural fields. In general, all sites are relatively flat with little, if any, woody vegetation. Site grading and clearing will either not be necessary or will be very minimal. In addition, the ground surface of these sites will be prepared with gravel and/or geotextile fabric and significant land disturbance, such as grading, should not be necessary. However, if significant grading (> 1 acre) is required, ATC will provide supplemental information required to obtain a stormwater discharge permit for the appropriate sites.

The only site that may have potential environmental issues is Site 1, where a stream runs along the eastern border and to the south of the site approximately 100 feet away. However, appropriate erosion control measures will prevent impacts to the stream. In addition, according to the archaeological report, provided in Appendix E, Exhibit 1, a burial site may be located in the area. Prior to using this laydown area, ATC will further investigate the location of this burial site to ensure that it will not be impacted during construction of the project.

Overall, environmental impacts from the use of these temporary laydown areas will be minimal. Other than site 1, the archival and literature review of previously documented archaeological or historic resources did not identify any known archaeological sites within the potential laydown areas. In addition, the WDNR WNI Database identifies endangered resources within the vicinity of one or more of these potential lay down yards. However, the habitats required to support these species do not exist on any of the potential sites.

Paddock-Rockdale 345 kV Access Project Technical Support Document

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

In general, ATC plans to utilize at least 10 acres at each site and a minimum of a 30-foot-wide access path would be required for ingress and egress. Upon approval of this application and final route selection, the actual site and the exact location on that site that will be used as a laydown yard will be based on many factors including project needs and environmental constraints. If it becomes necessary for ATC or its contractor to secure additional areas near the route to temporarily store transmission line construction materials, ATC will follow a similar selection process, which will include an environmental review.

2.5.7.5 Field Screening Protocol for Contaminant Testing

The potential exists that painted structures that will be replaced, as part of this project, may have been painted with coatings containing lead at some point in their life. Based on recent project experience, ATC has found that soils below some of these structures may show lead contamination. ATC, in consultation with the WDNR's Remediation and Redevelopment program staff, has developed a proposed process including sampling protocols and materials handling procedures to ensure that lead contamination is identified and addressed in conformance with WDNR regulations. These procedures have been submitted to the WDNR Remediation and Redevelopment staff for review and acceptance. ATC intends to implement the approved process for this project and will work with the WDNR Remediation and Redevelopment program staff to ensure that potential lead contamination is properly addressed.

With the exception of the possibility of lead paint contamination, no other contaminated materials are anticipated to be present at excavation locations. If contaminated materials are encountered, ATC or its Contractor will develop a specific contaminated materials management plan, which will list and describe what contaminants are present and what measures will be taken including:

- Methods of isolating the contaminated materials;
- Methods of analyzing the contaminated materials;
- Where the materials will be tested;
- Methods of removing contaminated materials from site; and
- Treatment and disposal of the contaminated material.

**Paddock-Rockdale 345 kV Access Project
Technical Support Document**

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

2.5.7.6 Contaminated Materials

If contaminated soil is encountered during the excavation for poles, appropriate measures will be taken to handle disposal properly.

The discussion below addresses the applicable portions of Sections 2.5.7.7 through 2.5.7.11.

Materials will be excavated at structure sites located in upland and wetland locations. No excavation will be completed in stream channels. Wetland excavated materials will either be backfilled in the transmission structure location evenly spread in an upland area within the ROW. Upland excavated materials will either be backfilled in the transmission structure location or evenly spread in an upland area within the ROW.

2.5.8 Dewatering Plan

At this time, it is unknown if dewatering activities will be necessary. Upon final route selection, geotechnical information that includes depth to groundwater will be collected. ATC will then be able to make some assumptions regarding the necessity to dewater at construction locations. If dewatering is necessary, it will be completed as described below and will comply with *Wis. Admin. Code* ch. NR216. The discussion below addresses the applicable portions of Sections 2.5.8.1 through 2.5.8.8.

The presence of groundwater at or near the ground surface can impact the construction procedures used when boring holes for transmission structures. If groundwater flow into an excavation results in the excavation becoming unstable, it is often necessary to support the walls of the excavation and/or dewater the site. Depending on site conditions and permit requirements, the extracted groundwater is generally discharged to an upland area where it is allowed to re-infiltrate, or to the local storm or sanitary sewer system. Extracted groundwater may also be discharged to a nearby water body if there is no indication of contamination and sediments, and it is free of fines. Water which may contain solids from construction process is most often pumped out of the excavation and trucked either to a treatment facility or to an upland site where it can be allowed to settle and re-infiltrate.

**Paddock-Rockdale 345 kV Access Project
Technical Support Document**

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

2.6 SUBSTATION INFORMATION

All substation modifications and work activity will be conducted within ATC property lines at Paddock and Christiana substations. Additional property will be required at Rockdale Substation as described in Section 2.1.4

2.6.1 Substation Location, Dimensions & Layout

General Arrangement drawings are provided for the Christiana, Paddock, and Rockdale substations showing the existing and new facilities in Appendix B, Figures 2, 4, and 6.

2.6.2 Size (acres) and Orientation

All substation modifications at Paddock Substation are within the existing substation fences. Rockdale Substation will be expanded to the south by 200 to 250 feet.

One-line drawings showing the proposed facilities are provided in Appendix B, Figures 1, 3, and 5.

2.6.3 Grading and Landscaping

The grading plan for the Rockdale Substation is included in Appendix B, Figure 7. No landscaping is anticipated unless required by local authorities. No grading or landscaping is required at Christiana or Paddock substations. With the expansion of Rockdale Substation, the fence and gravel pad will be extended southward.

2.6.4 Ownership Plat and Topography Maps

The substation location is identified on the topographic maps provided in Appendix A, Figures 7A, and 7B. Both substations are owned by American Transmission Company.

2.6.5 Transmission Lines and Structures

At Paddock, proposed 345 kV line W-10 will terminate on the existing facilities currently occupied by the de-energized 2156 kcmil ACSR conductor outside the substation. No new transmission line structures are anticipated around Paddock Substation.

Paddock-Rockdale 345 kV Access Project Technical Support Document

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

The existing Rockdale Substation is configured as a ring bus with a third breaker-and-one-half rung added to the south end of the substation. Proposed line W-10 will terminate in a new breaker-and-one-half position created by adding a breaker and dead-end structure to the existing bus. The third 345 kV rung will be configured to allow termination of the existing W-4 line from Wempletown Substation. Steel pole structures will be used outside of the substation to route the W-4, W-10 and X-31 circuits into their appropriate terminals.

2.6.6 Access Roads

Existing access roads will be used for Christiana and Paddock substations. The Rockdale site will use a combination of the existing access road plus a new road that connects to a private road on the west.

2.6.7 Construction Procedures

Rockdale

Some minor excavation work to accommodate circuit breaker, potential transformer and dead-end structure foundations will occur within the current fenced area in the existing part of the Rockdale Substation. Upon completion of sub-grade construction, the site will be re-covered with a crushed gravel surface. While the expansion will be done in a tiered construction to reduce the amount of cut and fill required as much as possible significant cut and fill materials will be needed. The new expansion area will be fenced. A storm water retention area in accordance with WDNR requirements will be constructed.

Christiana Substation

At Christiana Substation, the circuit breakers will be replaced on the existing foundations.

Paddock Substation

At Paddock Substation, a small trench will be dug and back filled with the removed soil to install the fiber optic cable

Construction procedures will be in accordance with permit requirements. Appropriate erosion control measures as described in Section 2.5.6 will be installed and maintained until final restoration.

**Paddock-Rockdale 345 kV Access Project
Technical Support Document**

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

2.6.8 Environmental Information

2.6.8.1 Land Use and Zoning

2.6.8.1.1 Current Land Use

Rockdale Substation is owned by American Transmission Company. It is used for an electrical substation. The proposed expansion area (approximately 3 acres) is located directly south of the existing Rockdale Substation. Part of this area is located on existing substation property comprised of mostly disturbed herbaceous vegetation. The other portion is comprised of agricultural land in row crop production.

Paddock Substation is also owned by American Transmission Company. The property is currently used for an electrical substation.

2.6.8.1.2 Zoning Near the Substation

Lands surrounding Rockdale Substation are zoned as agricultural. Refer to Appendix B, Figure 8 for the zoning map of the Rockdale Substation site.

The zoning within ½ mile of Paddock Substation is primarily exclusive and general agriculture. There is an area of single-family residential and single- and two-family residential on the north side of West Beloit Newark Road, approximately ¼ mile northeast of the substation.

Zoning maps are not included for the Christiana and Paddock substations since the footprint area is remaining unchanged.

2.6.8.2 Agricultural Impacts

About half of proposed substation expansion area at Rockdale Substation is located on agricultural land in row crop production. When the substation is expanded at this site, about 1.5 acres of land would be taken out of agricultural production.

2.6.8.3 Forestry Impacts

Forested land does not occur at the substation site.

**Paddock-Rockdale 345 kV Access Project
Technical Support Document**

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

2.6.8.4 Endangered/Threatened/Special Concern Species

Endangered, Threatened and Special Concern plants and animals, or valuable natural communities, will not be impacted by proposed expansion of the Rockdale Substation. (See Section 2.4.8.)

2.6.8.5 Archaeological and Historical Resources

Please refer to Appendix E, Exhibit 2 for information on Archaeological and Historic Resources in the Rockdale Substation expansion project area.

2.6.8.6 Affected Waterways

Waterways will not be impacted by the expansion of the Rockdale Substation.

2.6.8.7 Wetlands

Wetlands will not be impacted by the expansion of the Rockdale Substation.

Paddock-Rockdale 345 kV Access Project
Technical Support Document

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

2.7 EMF INFORMATION

A report has been prepared documenting magnetic field calculations performed for the proposed W-10 345 kV transmission line and magnetic field strength measurements have been taken at the Paddock and Rockdale substations following the guidance in the Commission's "Information Requirements for Applications to Construct Electric Transmission Lines and Substations," (Part 2.00), Version 17A, using the ENVIRO program developed by the Electric Power Research Institute (EPRI). The report, as summarized below is contained in Appendix C, Exhibit 1. All exhibits, figures and tables referenced in Sections 2.7.1 and 2.7.2 below are contained in the report.

2.7.1 Transmission Line EMF

Magnetic field levels for the transmission line facilities (1) at system peak and (2) under normal (defined as 80% of system peak), intact system conditions are provided in the report contained in Appendix C for the planned in-service year (2010) and 10 years following (2020).

Calculations were performed for each line segment on the route, using the height of the lowest conductor above ground at mid-span. Magnetic field calculations for existing transmission line configurations that will be altered by the proposed project are also provided in Appendix F, Tables 21 to 34 and Appendix F, Figures 21 to 34 for the year 2006.

The magnetic field levels listed in the tables contained in the report are the root mean square (RMS) resultant level at one meter above ground. The conductor phase arrangement and phase angles, and distribution facility arrangement are provided in the pole diagrams included with the report. The transmission line phase arrangements were chosen to minimize magnetic field levels for the double-circuit configuration.

2.7.2 Existing Substations

Magnetic field measurements at the Paddock and Rockdale substations, as required by the Commission's guidelines, are documented in Drawings ER-10-000070-001 and ER-10-000071-001 respectively, located in Appendix D, Figures 36 and 37.

2.7.3 New Power Plants (requiring no line additions)

Not applicable.

Paddock-Rockdale 345 kV Access Project

Technical Support Document

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

2.8 WDNR PERMITS AND APPROVALS

A number of WDNR permits are anticipated to be required for this project. ATC submitted Part 1 of an application, as provided for in *Wis. Stat.* §§ 30.025(1b) and (1e), for all WDNR permits required for construction of the facilities proposed in this Application. A copy of the WDNR Utility Permit Application, Part 1, is included in Appendix E. Detailed technical information supporting the Application for permits is contained in this TSD and is being provided to the WDNR as Part 2 of ATC's Utility Permit Application by copy of this Joint Application.

2.8.1 Waterways and Wetlands

Temporary clear span bridge crossings will be required at navigable waterway as described in Section 2.4.12. These crossings require approval by the WDNR under *Wis. Stat.* ch. 30.

Structures are proposed to be placed in wetland areas as described in Section 2.4.13. Placement of structures in wetlands will require approval under Section 404 of the Clean Water Act (CWA) from the U.S. Army Corps of Engineers (USACE) and water quality certification from the WDNR under Section 401 of the CWA.

2.8.2 Wetlands Alternatives Analysis

2.8.2.1 Wetlands and Route Selection Process

During initial project planning, environmental and social impacts, along with engineering feasibility and cost, were evaluated along 4 different routes that could potentially be used to route a transmission line between the Paddock and Rockdale substations. The segments that were eliminated following this initial evaluation included those:

- in or near highly developed residential areas;
- potentially impacting federally designated waterfowl production areas;
- potentially impacting large forested areas;
- indirect routes having higher costs; and
- with the potential for disruption to other land uses.

Following initial evaluation, two alternative routes were identified for further evaluation. Segments comprising these routes are detailed in Section 2.4. These alignments were chosen based on a number of factors including minimizing impacts to residences, wetlands, and forested areas, and the location of existing distribution lines.

**Paddock-Rockdale 345 kV Access Project
Technical Support Document**

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

2.8.2.2 Wetland Avoidance and Minimization

In addition to selection of routes and pole placements, the proposed and the alternative route will avoid and minimize wetland impacts to the extent practicable. However, given the extent of wetlands in the project area and structure spanning requirements, wetland impacts cannot be completely avoided along either route. Based on standard design elements, transmission structures will typically span 600 to 1200 feet. This distance is dependent upon several factors, including topography, ROW constraints. For the Proposed Route, shorter spans are required due to the location of the Jana Airport in Segment 2. These factors can restrict ATC's flexibility to completely avoid structure placement in wetlands.

The number of structures preliminarily determined to be placed in wetlands represents a worst-case estimate. Upon route approval, the final design will further attempt to minimize wetland impacts. For example, an effort will be made to move structures near a wetland edge to outside of the wetland. However, based on the number and extent of wetlands along each route, complete avoidance of wetlands is not likely.

Access through wetlands will also be minimized to the extent practicable. For example, if construction occurs during periods when the ground is not frozen or dry, wetlands occurring along roads will be accessed from the adjacent roads near the structure location, which will eliminate the need for heavy equipment to access through the entire length of the wetland.

2.8.2.3 Construction and Restoration Methods to Minimize Wetland Impacts

The use of heavy equipment in wetlands will be avoided whenever possible. No temporary or permanent fill placement is proposed for wetland access routes. When wetland access is required, disturbance to wetlands will be limited as much as possible. Examples of some disturbance limiting techniques include: timing wetland construction during dry or frozen conditions, construction of ice roads, and the use of low ground pressure equipment, and/or construction matting materials to help minimize soil and vegetation disturbances.

Upon completion of the transmission line, ATC will complete site restoration and re-vegetation consistent with the activities described in Section 2.5.5.

**Paddock-Rockdale 345 kV Access Project
Technical Support Document**

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

2.8.3 Storm Water Management

Coverage under the General Permit for Storm Water Discharges Associated with Land Disturbing Construction Activities is being requested in the WDNR Utility Permit Application, Part 1.

2.8.4 Endangered/Threatened Species Incidental Take

An evaluation of potential impacts to rare species is included in Appendix G, Exhibit 5, and is being submitted as a confidential document. ATC is applying for an Endangered/Threatened Species Incidental Take Authorization in this application.

**Paddock-Rockdale 345 kV Access Project
Technical Support Document**

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

2.9 OTHER AGENCY CORRESPONDENCE

2.9.1 ATC Correspondence

A letter was mailed to the Department of Agriculture, Trade and Consumer Protection (DATCP) on October 3, 2006 requesting a decision on necessity for preparation of an Agricultural Impact Statement for this project. A copy of the letter is located in Appendix G, Exhibit 1.

A letter was mailed to agencies with potential financial interest or conservation easements along either route on April 13, 2007. A copy of the letter and mailing list are located in Appendix G, List 1, and Exhibit 7.

A letter was mailed to the U.S. Army Corps of Engineers on May 1, 2007 along with a copy of the Wetland Delineation Report for the project requesting jurisdictional determination. A copy of the letter is located in Appendix G, Exhibit 8.

ATC met with Commission staff on three occasions: May 2, 2006 – Project Kickoff; July 18, 2006 – Project Update; and February 7, 2007 – Project Consultative Closeout. Meeting minutes are located in Appendix G, Exhibit 10.

2.9.2 Agency Responses

ATC has received a response from the WDNR to the project plan (Appendix G, Exhibit 2) submitted on February 14, 2007, which is located in Appendix G, Exhibit 6.

2.9.3 Agency Permits

The necessity of seeking local approvals for utility construction projects is governed by *Wis. Stats.* §§196.491(3)(i) and 196.491(4)(c).⁷

⁷ See *RURAL vs. PSC*, 239 Wis. 2d 660, 619 N.W. 2d 888 (2000). Section 196.491(4)(c) was added by 2003 Wisconsin Act 89, and provides to utility construction projects governed by *Wis. Stats.* § 196.49 the same treatment regarding local approvals that is provided by § 196.491(3)(i).

Paddock-Rockdale 345 kV Access Project
Technical Support Document

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

American Transmission Company works with all local units of government to assure that the representatives of those units of government affected by ATC's proposed construction projects are informed concerning ATC's proposed construction activities. ATC applies for those permits and other authorizations governed by local ordinances (County, Town, Village or City) that involve matters of public safety. Since the ordinances of the local units of government vary, each construction project may involve different local permits or authorizations. The public safety-related permits or authorizations that ATC applies for generally include road crossing permits, road weight limits, noise abatement ordinances (usually involving hours or times of construction), building permits (for such construction as control houses), and other similar public safety concerns for which permits or authorizations may be required by local ordinance.

Local ordinances also often address siting and location issues for the construction of utility facilities, or land use issues including recreational uses and aesthetics. These types of authorizations include conditional use permits or zoning permits or variances which often involve quasi-judicial proceedings and which involve the exercise of discretion on the part of the local unit of government on whether the authorization or permit may be granted. Since the Commission's statutory obligation is to address the siting of proposed utility facilities, and to address siting and route selection for new transmission lines, land use, recreational use and aesthetics, ATC does not apply for these types of permits or authorizations. However, ATC does supply the involved local governments with completed application forms, the necessary information required by the applicable ordinance or permitting authority as well as a sum of money equal to the fee that would be applicable, and requests that the local unit of government provide ATC with its comments or concerns regarding the siting and location of the proposed construction projects.

This Joint Application involves the following local units of government: towns of Fulton, Janesville, Beloit, Rock, Christiana and Albion, as well as Rock and Dane counties. ATC has or will meet with representatives of each of these units of government and, in addition to the filing requirements of *Wis. Stat.* §. 196.491, ATC will provide copies of this Joint Application to each affected unit of government and will make application for those permits identified following a review of the local ordinances that are public safety-related. ATC will provide the necessary information for those permits and authorizations that involve the siting, location, land use, recreational use, or aesthetics but will not formally apply for such authorizations in light of *Wis. Stats.* §§196.491(3)(i) and 196.491(4)(c).

**Paddock-Rockdale 345 kV Access Project
Technical Support Document**

Joint Application for PSCW Certificate of Public Convenience and Necessity and WDNR Utility Permit Part 2

2.10 PROPERTY OWNER INFORMATION

2.10.1 Alphabetized Lists in UNF Format

ATC will continue to maintain communication with all public officials representing the affected property owners throughout the certification and construction phases of the application. Mailing lists of potentially affected private and public property owners are located in Appendix H, List 1 and 2. Additionally, mailing lists of municipal clerks and regional planning commissions; state and federal agencies and local media outlets; and public libraries are located in Appendix H, Lists 3, 4, and 5, respectively.

APPENDIX A

PROJECT MAPS & ENVIRONMENTAL TABLES

<u>ITEM</u>	<u>DESCRIPTION</u>	<u>PAGES</u>
Figure 1	Proposed Project (showing Proposed & Alternate Routes)	1
Figure 2	Project Area	1
Figure 3A & 3B	Page Index – 1" = 400' Scale Maps	2
Figure 4A & 4B	Page Index – 1" = 2000' Scale Maps	2
Figure 5A	Existing Land Use – Proposed Route	7
Figure 5B	Existing Land Use – Alternate Route	7
Figure 6A	Orthophotography - Proposed Route	34
Figure 6B	Orthophotography –Alternate Route	36
Figure 7A	Topography – Proposed Route	7
Figure 7B	Topography – Alternate Route	7
Figure 8	Zoning	9
Figure 9A	Tax Parcels – Proposed Route	34
Figure 9B	Tax Parcels – Alternate Route	36
Figure 10A	Floodplain – Proposed Route	7
Figure 10B	Floodplain – Alternate Route	7
Figure 11A	Rock County Adopted Land Use Plans	18
Figure 11B	Dane County Adopted Land Use Plans	12
Figure 12	Plat Book Maps	6
Figure 13	Airport Height Limitation Zoning	1
Figure 14	Shared Corridor Maps (incl. Map Index) Identified in Route Impact Tables 1A-4	8
Figure 15A	Environmental Features & Access Plan - Proposed Route	34
Figure 15B	Environmental Features & Access Plan - Alternate Route	36
Figure 16	Laydown Area Maps	8

<u>ITEM</u>	<u>DESCRIPTION</u>	<u>PAGES</u>
Figure 17	Rock County Airport Height Limitation Zoning Map	1
Table 1A	Proposed & Alternate Routes General Route Impacts	2
Table 1B	Proposed & Alternate Routes Building Distance from ROW Centerline	2
Table 2	Detailed Route Impacts by Existing Land Cover (by Segment) for Proposed & Alternate Routes	2
Table 3	Impacts by Land Ownership – Public & Tribal Lands for Proposed & Alternate Routes	2
Table 4	Summary Table of Proposed & Alternate Route Impacts	1
Table 5	Airports Within 5-mile Radius of Proposed or Alternate Route	1

APPENDIX B

TRANSMISSION & SUBSTATION FACILITIES

<u>ITEM</u>	<u>DESCRIPTION</u>	<u>PAGES</u>
Figure 1	Christiana Substation One-Line Diagram	1
Figure 2	Christiana Substation Equipment Layout	1
Figure 3	Paddock Substation One-Line Diagram	1
Figure 4	Paddock Substation Plan View	1
Figure 5	Rockdale Substation One-Line Diagram	1
Figure 6	Rockdale Substation Breaker & One-half Scheme	2
Figure 7	Rockdale Substation Grading Plan	1
Figure 8	Rockdale Substation Zoning Map	1
Figures 9-19	Typical Structure Drawings	11

APPENDIX C

TRANSMISSION STUDIES

<u>ITEM</u>	<u>DESCRIPTION</u>	<u>PAGES</u>
Exhibit 1	Planning Analysis Document	133
Exhibit 2	Planning Analysis Cover Letter to MISO	2
Table 1	PROMOD Input/Output File 2011 Reference Cases	1

APPENDIX D

EMF STUDIES

<u>ITEM</u>	<u>DESCRIPTION</u>	<u>PAGES</u>
Exhibit 1	EMF Report	45
Figures 1-35	EMF Report Figures	35
Figures 36-37	EMF Report Figures	2

APPENDIX E

WDNR UTILITY PERMIT APPLICATION

<u>ITEM</u>	<u>DESCRIPTION</u>	<u>PAGES</u>
Exhibit 1	Archeological Report (text & tables) & Cover Letter	58
Exhibit 2	Archeological Report for Rockdale Substation	2
Exhibit 3A	CH 30 Photo Log – Proposed Route	6
Exhibit 3B	CH 30 Photo Log – Alternate Route	7
Exhibit 4	WDNR Utility Permit Application Part 1 & Cover Letter	11
Exhibit 5	Archeological Report for Laydown Areas	2
Figure 1A	CH 30 Notification Maps – Proposed Route	34
Figure 1B	CH 30 Notification Maps – Alternate Route	36
Figure 2A	TCSB Cross-Sections – Proposed Route	10
Figure 2B	TCSB Cross-Sections – Alternate Route	7
Table 1	Farm Buildings	1
Table 2A	Environmental Inventory Table - Proposed Route	1
Table 2B	Environmental Inventory Table – Alternate Route	1
Table 3A	Forestry Lands by Segment Table – Proposed Route	1
Table 3B	Forestry Lands by Segment Table – Alternate Route	1
Table 4A	Chapter 30 Supplemental Table – Proposed Route	1
Table 4B	Chapter 30 Supplemental Table – Alternate Route	1
List 1	Dane County CH 30 Adjacent Riparian Landowners	1
List 2	Dane County CH 30 Riparian Landowners	1
List 3	Rock County CH 30 Adjacent Riparian Landowners	1
List 4	Rock County CH 30 Riparian Landowners	1

APPENDIX F

PUBLIC OUTREACH

<u>ITEM</u>	<u>DESCRIPTION</u>	<u>PAGES</u>
Exhibit 1	July 2006 Environmental Survey Work Announcement Letter to Public Officials	1
Exhibit 2	July 2006 Environmental Survey Work Announcement Letter to Landowners	1
Exhibit 3	Fact Sheet	1
Exhibit 4	Open House Invitation Letter	1
Exhibit 5	Open House Thank You Letters	5
Exhibit 6	Comment Sheets	14

APPENDIX G

AGENCY CORRESPONDENCE

<u>ITEM</u>	<u>DESCRIPTION</u>	<u>PAGES</u>
Exhibit 1	DATCP Letter of October 3, 2006	8
Exhibit 2	Project Plan & Cover Letter Feb. 14, 2007	8
Exhibit 3	WSHS Letter re: Archaeological & Historical Resources (April 16, 2007)	1
Exhibit 4	TES Submittal Cover Letter to WDNR	1
Exhibit 5	TES Report (redacted version)	52
Exhibit 5A	TES Report Redacted Maps	89
Exhibit 6	WDNR Response to Project Plan	1
Exhibit 7	Local, State, Federal & Other Agencies with Interest in Lands along Proposed & Alternate Routes	40
Exhibit 8	ACOE Letter	1
Exhibit 9	WDNR Permit Application Part 1	51
Exhibit 10	ATC/PSCW Meeting Minutes	9
List 1	Mailing List for Exhibit 7	1

APPENDIX H

MAILING LISTS

<u>ITEM</u>	<u>DESCRIPTION</u>	<u>PAGES</u>
List 1	Potentially Affected Landowners	7
List 2	Public Property Landowners	1
List 3	Municipal Clerks & Regional Planning Commission	1
List 4	State & Federal Agencies and Local Media	3
List 5	Public Libraries	1

APPENDIX I

CONSTRUCTION TECHNIQUES

ITEM	DESCRIPTION	PAGES
Exhibit 1	Energized Construction Segments 14	9 & 6

APPENDIX J
ENVIRONMENTAL IMPACT FEES

ITEM	DESCRIPTION	PAGES
Table 1-2	EIF by Unit of Government for Proposed & Alternate Route	2

